





21453/8



REPORT  
OF THE  
SURGEONS  
OF THE  
EDINBURGH VACCINE INSTITUTION,  
CONTAINING  
AN EXAMINATION OF THE OPINIONS AND STATE-  
MENTS OF MR BROWN OF MUSSELBURGH,  
ON  
VACCINATION.

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DRAWN UP AT THE DESIRE OF THE MANAGERS, AND PUBLISHED BY  
THEIR DIRECTION, FOR THE BENEFIT OF THE INSTITUTION.

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1809.

DR. JENNER.—[BRYCE (Mr.)] Rept. of  
Surgeons of Edinb. Vaccine Inst., 35 pp.  
(foxed), and APPENDIX, 132 pp., 8vo,  
unbnd., SCARCE, 1809

In addition to the Jennerian matter, the valu-  
able (11) Appendices deal fully with Continen-  
tal and E. and W. Indies Progress of Vaccinat.,  
also Indian Inoculators (*vaccine crust*), various  
methods of Inoculation, &c.



REPORT

EXTRACT from the Minutes of a Quarterly Meeting of the MANAGERS of the Public Dispensary and Vaccine Institution of Edinburgh, August 1809.

...having taken into consideration the ... of a Book in opposition to Vaccination, by Mr Brown of Musselburgh, unanimously agreed to request the Surgeons of the Vaccine Institution to report their opinion of that Publication, and to state the facts which have occurred in their experience, tending to confirm or refute Mr Brown's doctrines. It was also agreed, that an extraordinary meeting should be held, to receive that report, as soon as it was prepared.

Extraordinary Meeting of the MANAGERS of the Public Dispensary and Vaccine Institution of Edinburgh, held 25th August 1809;

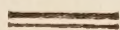
Ninian Lewis, Esq; in the Chair.

A Report from the Surgeons of the Vaccine Institution was read and approved of; and the MANAGERS unanimously directed, that it should be published for the benefit of the Institution.



*EXTRACT from the Minutes of a Quarterly Meeting of the MANAGERS of the Public Dispensary and Vaccine Institution of Edinburgh, held 4th August 1809.*

“ THE MANAGERS having taken into consideration the  
“ Advertisement of a Book in opposition to Vaccination, by Mr BROWN of Musselburgh, unanimously  
“ agreed to request the SURGEONS of the Vaccine  
“ Institution to report their opinion of that Publication, and to state the facts which have occurred in their  
“ experience, tending to confirm or refute Mr BROWN’S  
“ doctrines. It was also agreed, that an extraordinary  
“ meeting should be held, to receive that report, as  
“ soon as it was prepared.”



Extraordinary Meeting of the MANAGERS of the  
Public Dispensary and Vaccine Institution of Edinburgh, held 25th August 1809;

NINIAN LOWIS, Esq; in the Chair.

A Report from the SURGEONS of the Vaccine Institution was read and approved of; and the MANAGERS unanimously directed, that it should be published for the benefit of the Institution.



# REPORT

The Surgeons of the Vaccine Institution have received the request of the Managers to report their opinion of the reasons published by Mr. Brown of Musselburgh for doubting the efficacy of Vaccine Inoculation, and to state the facts which have occurred in their practice, tending to confirm or refute his doctrine.

The Surgeon have perused Mr. Brown's book with much attention, and find that his grounds of opposition to the Vaccine practice are—

First, That the whole subject is involved in contradictions and obscurities, even in



## REPORT, &c.

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THE SURGEONS of the Vaccine Institution have received the request of the Managers, to report their opinion of the reasons published by Mr BROWN of Musselburgh for doubting the efficacy of Vaccine Inoculation, and to state the facts which have occurred in their practice, tending to confirm or refute his doctrine.

The Surgeons have perused Mr BROWN'S book with much attention, and find that his grounds of opposition to the Vaccine practice, are,—

*First*, That the whole subject is involved in contradictions and obscurities, even in



the writings of its most strenuous advocates.

*Secondly*, That many circumstances have occurred in his investigations on the subject, which induce him to conclude, that though the security against smallpox may be regarded as *nearly* perfect immediately after vaccination\*, yet that the antivariolous power of cowpox gradually wears out of the constitution, so that after three or four years, the person is as liable to be affected by smallpox contagion, and after five or six years, by inoculation, as if he had never been vaccinated †.

With regard to the first of these positions, the Surgeons can with confidence assert, that the greater part of the contradictions and obscurities mentioned by Mr BROWN, do really exist no where but



in his own statements. In these, indeed, it must be confessed, they exist in such number and variety, that any one whose knowledge of vaccination was derived from his publication alone, would very readily assent to his opinion. The Surgeons cannot for a moment allow themselves to suspect Mr BROWN of wilful misrepresentation, in order to establish his positions ; but they find every where in his book such a misapprehension of the simplest doctrines of vaccination, and such a mistatement of the opinions of writers on that subject, as they confess it is difficult for them to account for on any other principle.

On this point the Reporters beg leave to state, that they are not acquainted with any contradictions or obscurities among the advocates of vaccination, concerning the principal facts relating to that subject, which ought in any degree to operate against a practice so beneficial to society ;



and that any differences of opinion on theoretical points of less importance, are merely such as must necessarily exist among men anxious to explain all the phenomena of a new and important discovery, and should rather act as a stimulus to more accurate observation, than be considered as operating to the prejudice of the discovery itself.

With regard to Mr BROWN's second position, namely, That the cowpox gives at best but a temporary security against the smallpox; this, it must be observed, is by no means an original opinion. It is nearly as old as the practice of vaccination itself; and, though Mr BROWN may not have known it, has often been refuted in the most satisfactory manner. The only peculiarity of Mr BROWN's opinion on this point is, that he has extended the period of security one or two years beyond the period assigned by the former opponents of the practice.



In support of his opinion, Mr BROWN brings forward forty-eight cases, in which he states that the natural smallpox has occurred after vaccination; and twelve, in which he produced smallpox by inoculation. Here, it is evident, two questions occur: *First*, Were these children vaccinated in a sufficient manner? and, *secondly*, If they were, had they really the smallpox?

With a view to ascertain these points, the following considerations deserve particular attention.

1. Mr BROWN differs remarkably from all other inoculators in his opinion of the appearances of perfect vaccination, and the analogy on which he founds this opinion, (viz. from inoculation with the small-pox), is well known to be erroneous. At page 235., Mr BROWN says, "The difference betwixt the practice of vaccination and inoculation" for the



smallpox, “ is by no means so great as  
 “ to throw away as useless, all that in-  
 “ formation which our former experience  
 “ certainly imparted. I contend, that  
 “ the phenomena, so far as they de-  
 “ pend upon the vesicle and pustule, en-  
 “ abling us to judge of their producing  
 “ the constitutional effect, are exactly the  
 “ same. It was well known to those  
 “ who had any experience in the prac-  
 “ tice of inoculation” for smallpox, “ that  
 “ every variation of the pustule and are-  
 “ ola, were still capable of producing  
 “ the constitutional influence. You might  
 “ have every variety already noticed, as  
 “ occurring in vaccination, and still the  
 “ constitutional disease imparted in its  
 “ greatest perfection. *The areola was*  
 “ *here looked upon as the decisive test*  
 “ *of its influencing the system,* and as a  
 “ proof of the perfect satisfaction that  
 “ existed, nobody ever *dreamed* of re-  
 “ inoculation where the pustule and are-  
 “ ola were obtained. The experience,



“ therefore, that any practitioner formerly  
 “ obtained under the practice of inocu-  
 “ lation, is by no means to be laid aside  
 “ as useless, in conducting that of vac-  
 “ cination, or enabling him to judge of  
 “ its merits ; on the contrary, I am se-  
 “ riously inclined to maintain, that if  
 “ any practitioner has not had that ex-  
 “ perience, he is incompetent either to con-  
 “ duct or judge of vaccination, singly or  
 “ comparatively.

“ In conformity, then, both with my  
 “ own experience of the phenomena of  
 “ inoculation and vaccination, *I contend,*  
 “ *that if you have a vesicle, attended with*  
 “ *an areola, you may depend upon the pro-*  
 “ *duction of whatever effects it* [vaccina-  
 tion] “ *is capable of.*”

Now, with regard to inoculation for the  
 smallpox, the Surgeons state it with the  
 greatest confidence, as a well-known fact,  
 that a pustule may be produced at the



inoculated part, which pustule may be surrounded by an inflammation or areola, even to the extent of half-a-crown piece, and contain matter capable of propagating the disease, but nevertheless may be merely a local affection, leaving the constitution as liable to be affected by smallpox at some future period, as if no pustule had been formed \*. This has been confirmed by numerous cases, some of which terminated fatally. Mr BROWN's opinion, therefore, has no support from the analogy of smallpox inoculation; and with regard to cowpox inoculation, the Surgeons can also with confidence assert, that a vesicle with an areola may be produced, without affording any protection against the smallpox, and that, of those vaccinated on Mr BROWN's principle, a great proportion will still remain liable to

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\* See the Cases of Dr DAWSON, in the Transactions of the College of Physicians of London, vol. iii.



that disease. If, therefore, Mr BROWN has thus conducted his inoculation for cowpox, it is by no means astonishing, that he has met with smallpox after supposed vaccination, the only wonder is, that he has met with it so seldom.

Mr BROWN has quoted the Report of the Royal Jennerian Society on Vaccination. He should have known, that it is stated in that Report, that "it is a fact well ascertained, that in some particular states of certain constitutions, whether vaccine or variolous matter be employed, a local disease only will be excited by the inoculation, the constitution remaining unaffected; yet that matter taken from such local vaccine or variolous pustule, is capable of producing a general and perfect disease\*." As this

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\* See Report of the Royal Jennerian Society for January 1806, art. 9.



statement, however, is not only not *in conformity with*, but in direct opposition to the result of Mr BROWN's *experience*, both in variolous and in vaccine inoculation, the Surgeons are not surprised that he has entirely overlooked it.

But while the Surgeons are deeply impressed with the doubtful nature of Mr BROWN's vaccination, they do not pretend to say that none of his forty-eight cases were perfectly vaccinated. They believe that many of them were, especially as some of them were not vaccinated by Mr BROWN. The next question, therefore, is, Had they really smallpox? And here the Reporters go on to remark,

*2dly*, That Mr BROWN's opinions on the appearances of constitutional smallpox, are as peculiar, and as much at variance with the generally received opinions of the medical world, as those on vaccination. Mr BROWN maintains, that when-



ever you produce a pustule with areola or surrounding inflammation, you produce constitutional smallpox. When Mr BROWN, therefore, inoculates with smallpox a person who has formerly been vaccinated, and produces a pustule with inflammation around it, he sets it down as a case of smallpox after vaccination; for, says Mr BROWN, you cannot produce such a pustule in a person who has had the smallpox\*. Now, the error of this statement is not matter of opinion, but matter of fact; for every surgeon knows, or ought to know, that pustules, large, and of a regular appearance, with surrounding inflammation, are often produced on the faces, necks and breasts of nurses, by the contact of children ill of smallpox, though these nurses had formerly passed through that disease; and surgeons have been personally known to

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\* Pages 78.-235, 236, and 260.-1.



some of the reporters, who kept up a supply of smallpox matter for inoculation, by producing a succession of inoculated pustules upon their own arms. This has also been frequently practised by one of your Reporters, and the pustules were always attended with considerable surrounding inflammation, and occasionally with swelling of the glands in the axilla. The *experience* of Dr WILLAN, who has deservedly earned great fame in the medical world, by his accurate observations on cutaneous diseases, is also directly in opposition to Mr BROWN's *opinion* on this point. In his Treatise on Vaccination, at page 15. Dr WILLAN says, "In  
 " other instances of variolous inoculation  
 " after vaccination, the *pustules* generally  
 " resembled that which is exhibited at  
 " Plate I. NO. X.;" (viz. a pustule, with a considerable degree of surrounding inflammation or areola); " *a similar effect is*  
 " *produced by inoculating with variolous*  
 " [smallpox] *matter, a person who has pre-*



“ *viously had the smallpox.* The matter  
 “ contained in the pustules thus excited  
 “ either after the smallpox or after vac-  
 “ cine inoculation, is capable of commu-  
 “ nicating smallpox to a person who has  
 “ not before been affected with that  
 “ disease.” Dr WILLAN also gives a  
 plate shewing the appearance of a pus-  
 tule, attended with an areola or surround-  
 ing inflammation, made from the inocu-  
 lated arm of a young woman who had  
 had the smallpox fourteen years before,  
 in order to compare it with the appear-  
 ance on the arm of his own son, when  
 inoculated with smallpox three years after  
 vaccination. The pustules, he states, so  
 nearly resembled each other, that he  
 thought a repetition of the drawing un-  
 necessary \*. Now, with regard to Mr  
 BROWN’S Cases of smallpox inoculation  
 after vaccination, it appears to the Report-

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\* Page 15. Note.



ers, that in eleven out of the twelve he produced nothing more than local pustules of this kind; and they do not hesitate to state it as their decided opinion, that not one of these was affected with constitutional smallpox. With regard to the remaining case, the 11th, constitutional symptoms, and an eruption of eighteen pustules, are stated to have followed the inoculation. Now, admitting this to have been smallpox, it need not be matter of astonishment to any one, that out of the number vaccinated by Mr BROWN on his peculiar principle, some should remain liable to be affected with that disease; and such an occurrence, for the reasons already assigned, can never be supposed to operate to the prejudice of vaccination.

With regard to the cases given by Mr BROWN, as cases of natural smallpox succeeding to vaccination, the Reporters have already stated, that they have no



proof of them having been properly vaccinated, but, on the contrary, strong reason to suspect that many of them were not. In one instance, (the 27th Case), it has come to their knowledge, that the inoculator informed the parents at the time, that the child was not properly vaccinated. Having ceased to visit in that neighbourhood, the gentleman could not repeat the inoculation himself, but recommended that this should be done, otherwise the child was liable to be infected with the smallpox.

But besides this, it is to be particularly observed, that by a most convenient and comprehensive doctrine, Mr BROWN has made up his Forty-eight Cases by pressing into his service many instances which no other surgeon would ever have discovered to bear the smallest resemblance to smallpox. Mr BROWN believes, that before his period of security is elapsed, persons who have been vac-



inated are liable to be partially affected by the infection of smallpox : that at an early period, it produces a slight rash, at a more advanced period, papulæ, which disappear without suppurating, afterwards pustules, which continue a few days, and at length complete smallpox \*. Accordingly, in some of his cases, we have a slight eruption of red pimples, most gravely described as a case of smallpox after vaccination ; in others, an eruption of hard papulæ ; in others, small pustules, which decayed in three days. Nay, what is still more wonderful, we have cases set down by him as cases of natural smallpox succeeding to vaccination, in which there was *no eruption at all* ; only a slight fever, which went off in two days. Any attempt to refute this doctrine by reasoning would be to insult the understanding of every man of common sense. The Reporters

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\* Pages 257 and 263.



shall, therefore, merely state the result of an investigation of some of Mr BROWN'S Cases, which was made during, or immediately after, the prevalence of the disease.

Messrs GILLESPIE and NEWBIGGING, surgeons in Edinburgh, having heard that several children in the village of Easter Duddingston, had been infected with natural smallpox after vaccination, proceeded, about twelve months ago, to that village, to investigate the truth of the report. They found the history of most of those cases to differ materially from that now given by Mr BROWN.

The mother of *Ellison* and *Thomas Baur*, (the 11th and 12th cases of Mr BROWN), assured Messrs GILLESPIE and NEWBIGGING, that the eruption on her two children had the appearance of blisters, filled with a watery fluid, which began to



dry up, and to form scabs, about the fifth day; and were perfectly different from the smallpox with which two of her children, who had not been vaccinated, were affected about the same time.

In the case of *Isabel Eal*, (the 13th case of Mr BROWN), they found the cicatrix on the arm large, but more resembling the cicatrix from superficial ulceration, than that from the regular vaccine affection. The eruption on this child was exactly similar to that on *Ellison Baux*.

*Jean Wood*, (the 14th case of Mr BROWN), had an eruption of watery vesicles or blisters, which began to scab on the third day. This child, and about twenty others, had been vaccinated at the same time by Mr GILLESPIE, and none of the others had any eruptive disease.

*Margaret Proudfoot*, (the 15th case of Mr BROWN), had an eruption similar to

that in the above cases, which was declared, by a medical person who saw her at the time, to be chicken-pox ; and her brother, (the 16th case), was, according to Mr BROWN's own account, sick for two days, *but had no eruption*, although he had passed Mr BROWN's period of security, having been vaccinated six years and a half. Yet these two cases are included among Mr BROWN's cases of smallpox succeeding to vaccination !

*Elizabeth Saffley*, (17th case), according to Mr BROWN's own account, had a sharp fever, which, after two days, was succeeded by *a rash, but no eruption*. Yet this is also reckoned among his cases of smallpox after vaccination !

The 45th case is exactly similar. The child, he informs us, was extremely sick, and affected with starting, sneezing, and other symptoms of eruptive fever ; but when Mr BROWN called three days after,



expecting no doubt to find a crop of small-pox, the “ sickness was gone, and no pustular eruption had followed.” Mr BROWN, however, was determined not to be disappointed, for he sets this also down as a case of smallpox succeeding to vaccination!

The 6th case, by Mr BROWN’s own account, was not properly vaccinated; yet it also is mentioned as a case of small-pox after vaccination!

Messrs GILLESPIE and NEWBIGGING insist, that the mothers, in describing the eruption on such of the children as had been vaccinated, uniformly mentioned it as similar to the *nirles*, or chicken-pox, and quite different from smallpox, which was at that time frequent and fatal in the village. Mr BROWN’s only argument to prove these cases to have been smallpox, is, that there was no chicken-pox raging in the neighbourhood. The Reporters

however insist, that many of these very cases were chicken-pox ; and besides, Dr FARQUHARSON and Mr GILLESPIE attended many cases of chicken-pox both in children who had been vaccinated, and in others who had passed through the smallpox, in that neighbourhood, at the time when this disease was prevalent in Easter Duddingston ; and lest Mr BROWN should contend, that his cases were cases of smallpox, modified by previous vaccination, the following case puts the matter beyond a doubt, as the child never had been vaccinated :

*Gilbert Mill*, aged ten months, living in Easter Duddingston, and who had neither been vaccinated nor had smallpox, was affected about the same time with the children above mentioned, with an eruption of watery vesicles, resembling those on Ellison and Thomas Baux, which had decayed and were dried up by the fifth day.



The Reporters have had no opportunity of investigating the rest of Mr BROWN's cases, but from the above specimen of what he calls cases of smallpox, it will be evident to every one with how great caution his statements are to be received. A connected view of his own description of his cases, will shew this in a still stronger light. It may be premised, that the distinctive character of smallpox is, that the pustules do not attain their full size till the eighth day, then begin to turn, and are converted into scabs by the eleventh or twelfth. Chicken-pox forms more rapidly, consists, during the first and second days, of watery vesicles, which sometimes burst while in that state; but the more perfect forms of it, as described by Dr WILLAN, go on to maturation, contain thick yellow matter, and do not decay till the sixth day. The eruption is often preceded by a smart fever for two or three days, sometimes by convulsions, and frequently leaves pits in the skin smaller than those

of smallpox, but which continue for life. Compare with this statement Mr BROWN's account of his cases of natural smallpox. Six of them are stated to have had *no eruption at all*. Twenty-five of them decayed on or *before* the *sixth* day, many of these by the third and fourth; so that twenty-five of the forty-eight, from his own statement, exhibited the usual appearances of chicken-pox. Of the remaining seventeen, the Reporters next set aside two; one which he acknowledges to have been imperfectly vaccinated, and another which he states to have taken smallpox, without describing the appearances. Of the remaining fifteen cases, only three are described as having decayed about the eighth day. The rest are described in the most vague manner, as having stood out till the sixth or seventh, seventh, and seventh or eighth day. It is farther to be particularly remarked, that the eruptive stage of chicken-pox often occupies several



days, so that in such cases the disease has, to a superficial observer, the appearance of continuing eight days. The first set of pustules decays about the fifth or sixth day. On the second day another set comes out, which decays perhaps on the seventh; and on the third day a third set, which decays on the seventh or eighth day. A person who sees such a case only on the seventh or eighth day, finds pustules fully matured, and being informed that it is the seventh or eighth day of the disease, sets it down as smallpox. In this way are to be accounted for many cases which have been considered as smallpox after vaccination, and many also of an older date, in which persons were supposed to have taken smallpox twice. To distinguish such cases from the very mild forms of smallpox, considerable attention is necessary, and an accurate observation of the disease through its whole course. But we find nothing of this in Mr BROWN'S fifteen cases; many

of them he appears not to have seen during the course of the disease, but admitted them to have been cases of smallpox merely from the report of the parents, that the eruption stood out for six or seven, or seven or eight days. Others of them he did not see till the seventh or eighth day, and then found the eruption decaying, and some he appears not to have seen till the eruption was gone, but concludes it to have been smallpox from the blanes left in the skin. Upon the whole, it appears to the Reporters, that Mr BROWN's statements of his cases are as vague and superficial as his theories are flimsy and hypothetical; and in an investigation of so delicate a nature as this, are absolutely inadmissible.

It is to be particularly observed, that Mr BROWN mentions thirty or forty cases whom he vaccinated in the early part of his practice, and immediately afterwards inoculated with smallpox, as a test of the



vaccination having been perfect \*. These are now much beyond Mr BROWN's period of security, but not one of them has to his knowledge taken smallpox †. Had he been willing to expose his doctrine to a fair test, he had an easy opportunity of doing so, by inoculating with small-pox some of these, now that the period of their security is past. Had they, or any of them, then taken the smallpox, Mr BROWN would have had some grounds for sounding the alarm ; but no such test was had recourse to. As Mr BROWN, therefore, had it in his power fully and distinctly to ascertain the truth of his theory before submitting it to the public, and has omitted to do so, either he is chargeable with a culpable neglect of his duty to the public, or it must be concluded that he was afraid to commit his favourite doctrine to such a test. From

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\* Page 197.

† See page 301.

every thing that now appears, indeed, even in Mr BROWN's own book, there is the strongest reason to conclude, that if any of his cases really had smallpox, they had not been duly vaccinated ; while, on the other hand, it seems abundantly evident, that by far the greater part of the cases which he dignifies with that name, bore no resemblance to smallpox.

The Surgeons have already stated, that Mr BROWN's doctrine of the temporary protection of cowpox against the smallpox, is not new, and that it has often been refuted in the most satisfactory manner. Mr BROWN, however, states, That as nearly, if not entirely, the whole of the experiments made to ascertain the antivariolous power of the cowpox, have been made *within a few weeks or months after vaccination*, they are therefore insufficient to remove the objection of its gradually wearing out of the constitu-



tion. See p. 255. Now, Mr BROWN could not be ignorant of the numerous experiments and observations on this point, mentioned by Dr WILLAN, which extend from *three to five years* after vaccination. In these the patients were exposed to smallpox infection in every way, viz. by inoculation, by sleeping, playing, handling, and otherwise coming in contact with smallpox patients, with impunity. The Reporters repeat, that Mr BROWN could not have been ignorant of these facts, seeing he has made a quotation from the pages in Dr WILLAN'S book in which they are mentioned. Nay, what is still more extraordinary, he has quoted some of these very experiments, and with an ingenuity peculiar to himself, has made use of them to support his own doctrine. The following commentary, the Reporters think worthy of being preserved as a literary curiosity ; it certainly is the most

extraordinary piece of reasoning they have ever met with in any professional writer, though by no means a solitary specimen of Mr BROWN's reasoning. At page 16. of Dr WILLAN's book, some experiments of Dr STANGER are narrated in the following terms: " Dr STANGER, physician " to the Foundling Hospital, has favoured me with the result of a series of " inoculations with variolous matter after " vaccination. Thirty-five children vaccinated between the 30th March 1801 " and the end of May 1802, were inoculated with recent variolous matter on the 9th August 1802. In " most of these cases, the puncture presently healed; in some, slight inflammation was produced; and in three or " four of the cases there appeared a small " acuminated pustule, which, after some " days, was succeeded by a slight scab, " no constitutional disorder having inter-



“ vened. In November 1804, twenty-  
 “ one of the children vaccinated in 1801,  
 “ and afterwards variolated in 1802, were  
 “ a second time inoculated with matter  
 “ taken from a child labouring under the  
 “ natural smallpox. The result of this  
 “ trial, made *three years and a half* af-  
 “ ter vaccination, confirmed its preven-  
 “ tive power. The only effects produced  
 “ were slight inflammation about the  
 “ puncture, in some cases, and in a few  
 “ others, a small local pustule, which soon  
 “ disappeared.” If words have any pre-  
 cise meaning, this passage evidently im-  
 ports, that the appearances produced by  
 the second inoculation with the matter  
 of smallpox, at the distance of three years  
 and a half after vaccination, were the  
 very same as those produced by the first,  
 at the distance of a few months after vac-  
 cination, and the inference is, that the  
 antivariolous power was *not* diminished;  
 for the details of the two sets of experi-

ments have as much the same meaning as as it is possible to express in the English language. But hear Mr BROWN's commentary on the passage. At page 302 of his book, after quoting the above from Dr WILLAN, he says; "Now, I apprehend from this description, although a very imperfect one, it clearly appears, that what I have elsewhere contended for is strikingly corroborated; for in those inoculations which included only periods of some months, to that of twelve, only a very trifling effect, such as I have already described, was produced; but when it came to be repeated at the distance of *two or three*," [Dr WILLAN says three and a half] years, not only did the previous inoculation afford no additional obstruction to the progress of the second inoculation, *but now a greater inflammation, and even pustules, were produced, distinctly shewing that the immunity from*



*“ smallpox was much weakened by the increased distance from vaccination.”* On this commentary, the Reporters have only to remark, that it is melancholy beyond expression, to see a man of education thus deluding himself, or attempting to impose upon the public.

With regard to the facts which have occurred in the practice of the Surgeons of the Vaccine Institution, which tend to confirm or refute the doctrine of the mere temporary protection afforded by vaccination against the smallpox, the Reporters beg leave to state, that the result of their experience, is in strict conformity with that of Dr JENNER, and the other advocates of vaccination. They have lately inoculated with smallpox, children who were vaccinated eight and nine years ago, and find that they completely resist the disease; they have not been able to produce on any of them more

than a local inflammation, which disappeared in four or five days. They have almost every year visited numbers of children who were vaccinated during the first years of this institution, and this they have again done within these three months. In this investigation, they have found a great many of those who were vaccinated in the years 1801 and 1802, that is, seven and eight years since, who have been frequently and freely exposed, and especially within these last six months, to the contagion of the natural smallpox, by playing, sleeping, and otherwise mixing with children in all the different stages of that disease, without being infected.

The Surgeons shall conclude this Report with the following history, which was related to them since the publication of Mr BROWN's book.—The wife of a carter, residing at the Sheriff-Brae of Leith, brought a young infant to the Vaccine



Institution to be inoculated with the cowpox: She stated, that the smallpox was very frequent in her neighbourhood, and that she had within these few months lost a child by that disease: On being asked why she had not brought that child to be vaccinated long ago, (for the child was two years old when he died from the smallpox), she replied, with tears, and expressions of the deepest regret, that she certainly would have done so, for that she had other two who had been inoculated at this Institution, one six and a half years ago, the other about four and a half years ago, but that she had heard some reports against the cowpox, and therefore had neglected doing it; but she said, that now she, and all her neighbours, were convinced, in spite of all the stories which were spread against the cowpox, that it certainly prevented the smallpox, because her two children who were vaccinated, as above mentioned, (and who, it will be ob-

served, were both beyond Mr BROWN's period of security against the epidemic smallpox), had slept in the same bed, eat out of the same dish, and used the same spoon with their brother, during the whole of his illness, and yet had entirely escaped the smallpox.

WM. FARQUHARSON.

JAMES BRYCE.

ALEXANDER GILLESPIE.

JOHN ABERCROMBIE.





## APPENDIX.

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IN the preceding Report, the Surgeons of the Vaccine Institution have made some strictures on the leading parts of Mr BROWN's speculations on Vaccination. As that Report is now to be published at the desire of the Managers, they think it proper to add some further observations on Mr BROWN's statements and reasonings, to shew upon what grounds the assertions contained in the Report are founded.

The Surgeons, in the first place, cannot help expressing their strong disapprobation of the manner in which Mr BROWN has, in almost every part of his book, ascribed opinions to various authors without quoting their own words, or giving any reference to the part of their works in which he conceives these opinions to be stated. In this manner, he has ascribed opinions to the principal writers on Vaccination, which the Surgeons cannot find in any part of their writings; and others, which are in direct contradiction to the doctrines which these authors inculcate in the most particular manner. In some instances, he has quoted the words of an author with such changes as suited his own purpose, and which make the words convey a meaning very different from that which the author meant to express.

Mr BROWN, at page 52. of his book, states, " The Medical Council of the Jennerian Society admit, " that a few cases have been brought before them, " where persons have taken the smallpox after having



“ passed through the cowpox in a regular way ;” &c. Now, this statement of Mr BROWN’s implies, that in those cases the persons had taken the smallpox after having *actually* passed through the cowpox in a regular way. On referring to the Report of the Royal Jennerian Society, however, it will be found, that no such admission is made. The words are, “ It is admitted “ by the Committee, that a few cases have been “ brought before them of persons having the smallpox, “ who had *apparently* passed through the cowpox in a “ regular way.” See the Report of the Medical Council of the Royal Jennerian Society for January 1806, Art. 9. And they afterwards go on to state their reasons for supposing that these persons, though *apparently*, had not *actually* passed regularly through the cowpox. See Art. 12. Now, it is evident, that Mr BROWN, by omitting the word *apparently*, has materially changed the meaning of the passage. Not, however, contented with this, he afterwards states the same admission on the part of the Jennerian Society in still stronger terms. At page 276. he asserts, that “ the “ Royal Jennerian Society in London admit, that cases “ of smallpox have occurred, *where sufficient proof has “ existed of the most perfect vaccination.*” In the same page, the Royal College of Physicians in London, are said to have made the same admission ; but no such admission is to be found in their Report. Concerning the antivariolous power of cowpox, the Report of the Royal College of Physicians states, “ The security de- “ rived from vaccination against the smallpox, if “ not absolutely perfect, is as nearly so as can per- “ haps be expected from any human discovery ; for “ among several hundred thousand cases, with the re-

" sults of which the College have been made acquaint-  
 " ed, the number of *alleged failures* has been sur-  
 " prisingly small, so much so, as to form certainly no  
 " reasonable objection to the general adoption of vac-  
 " cination." See page 4. Now, although there is  
 every probability, from what Mr BROWN has mention-  
 ed at page 51. of his book, for concluding that this is  
 the passage in the Report of the College of Physicians  
 from which he has made his statement, yet most as-  
 suredly there is no admission in it by the College,  
 " that cases of smallpox have occurred *where sufficient*  
 " *proof has existed of the most perfect vaccination ;*"  
 on the contrary, the failures are said to be "*alleged*  
 "*failures ;*" evidently implying, that a *doubt* existed  
 either of the person having been sufficiently vaccinated,  
 or of the disease which supervened being the smallpox ;  
 and accordingly, the College, in an after part of their  
 Report, ascribe some of these failures " to the inexpe-  
 " rience of the early vaccinators ;" and state that " it is  
 " not unreasonable to expect, that further observation  
 " will yet suggest many improvements that will re-  
 " duce the number of anomalous cases, and furnish the  
 " means of determining with greater precision *when*  
 " the vaccine disease has been effectually received."  
 Page 5.

Again, at page 52., Mr BROWN states : " The Col-  
 " lege conceive the *practice of vaccination* to be as  
 " completely established as the nature of such a que-  
 " stion admits," &c. Now, in the first place, the  
 practice of vaccination, is not a question ; and, in the  
 second place, this statement of Mr BROWN is quite dif-  
 ferent from the meaning of the College, expressed in



their Report. The words of the Report are, "The  
 " truth (*i. e.* of the antivariolous power, or of the  
 " propriety of vaccination) seems to be established  
 " as firmly as the nature of such a question admits,"  
 &c. page 7.

At page 99, Mr BROWN has mentioned Mr BRYCE as contending, that all the variety of vesicles have been found capable of giving the constitutional security. Now, one great object of Mr BRYCE's book on the cowpox, has been *to maintain the contrary in the most particular manner*. Mr BROWN goes on to state in the same page: " Besides, he (Mr BRYCE) apprehends,  
 " that a test can be obtained, by which it may be  
 " uniformly ascertained, whether or not the vaccine  
 " vesicle has exerted its antivariolous powers upon  
 " the system; *and therefore, as we are no longer de-*  
 " *pendent upon the phenomena attending the progress of*  
 " *the vesicle, all its different appearances may be disre-*  
 " *garded.*" This is quite contrary to the doctrine stated in Mr BRYCE's book, and shews Mr BROWN to be totally ignorant of the nature of the test of perfect vaccination, proposed by Mr BRYCE; for it is only by particular attention to the *appearances* of the vesicles, so as to be able to contrast the *progress* of them with each other, that any advantage is to be obtained by performing this test.

At page 58., Mr BROWN says: " He," Mr BRYCE,  
 " also states several cases of experiments where it  
 " would appear, and which he says *shews distinctly,*  
 " that if you vaccinate a day or two previous to in-  
 " troducing smallpox virus, you will uniformly find

“ that the variolous pustule proceeds not only slowly  
 “ in its progress, *but (has) its size and period of ma-*  
 “ *turation considerably diminished.*” In so far as this  
 statement can be understood, it appears to involve a  
 complete contradiction ; for the meaning of a pustule  
 having its period of maturation considerably diminish-  
 ed, can only be, that it arrives at maturity in a shorter  
 period of time, or more quickly than usual. The  
 statement then stands thus, viz. if you vaccinate a  
 day or two previous to introducing smallpox virus, you  
 will uniformly find, that the variolous pustule proceeds  
*not only slowly in its progresss, but more quickly than*  
*usual.* Mr BRYCE, never with his knowledge, made any  
 experiments which could entitle him to say that they  
*shew distinctly* such an absurdity.

Mr BROWN has made a large extract, extending from  
 the beginning of the 319th to the middle of the 325th  
 page in his book, which he has imposed on his readers,  
 as one continued extract from Mr BRYCE's book on  
 the Cowpox, to shew the insufficiency and uncertainty  
 of vaccination. But on turning to Mr BRYCE's book,  
 this apparently continued extract turns out to be a  
 garbled production made by Mr BROWN, to serve his  
 his own purpose. Thus Mr BROWN first gives one  
 paragraph, beginning at page 139. and ending at  
 page 140 of Mr BRYCE's book ; he there finds some  
 passages contrary to his doctrines and to his purpose,  
 and therefore passes over six pages. At page 146.,  
 he finds part of a sentence which appears to suit his  
 purpose, and takes it in ; he then passes over ten pa-  
 ges, the contents of which serve to contradict some of  
 his assertions and favourite doctrines. At page 156, he



again finds another sentence suitable to his purpose, and takes it in, but does not finish the paragraph. The continuation of this extract is now to be found in the Appendix to Mr BRYCE's book, one part of it at page 111., and another part at page 113., Mr BROWN always taking care to leave out what it is not convenient for him to insert, and thus, by not giving a proper view of the context, misrepresenting and mistating the whole subject.

Mr BROWN has made a violent attack on Mr BRYCE's discovery of the powers of the vaccine scab to produce perfect cowpox. At page 104., Mr BROWN says, "Mr BRYCE asserts, that the scab or crust is "equally capable of producing the constitutional or "perfect disease with the most active limpid virus, is "one of the best modes of preserving the vaccine "virus fit for use, and that it is not liable to the same "objections as when in a viscid or opaque state." To this fact, ascertained by ample experience, Mr BROWN opposes abundance of invective and reasoning. At page 69., he says, "All former absurdities and contradictions were swallowed up in the *opinion* stated "by Mr BRYCE, who gravely asserted, *upon the most* "positive facts, that the scab was equally capable of "giving the genuine and constitutional disease with "the most limpid virus," &c. At page 105., Mr BROWN states: "It appears to me impossible to conceive, by any of the hitherto known laws of the "animal economy, or by any knowledge of anatomy, "that when a pustule or vesicle changes into the form "of a scab, that this scab consists of matter possessing "stronger powers than what it retained when in a state

“ of fluidity,” &c. Here Mr BROWN artfully changes the statement made by Mr BRYCE, by the introduction of the word *stronger*. He then proceeds to consider this as hypothetical, and contrary to all analogy, and enters upon a long discussion about the functions of the skin, which the Surgeons do not pretend to understand, but which, after six or seven pages, brings about this remarkable admission: “ Besides the ample testimony “ given by Mr BRYCE and other practitioners, I am “ also convinced, *from my own experience, that it (the “ scab) is capable of producing the regular vesicle and “ perfect disease*; but farther than this I cannot go.” See page 116. It is to be regretted, that Mr BROWN has not told us what he thinks the most active limpid virus of cowpox can produce, *more* than the regular vesicle and perfect disease. Mr BROWN’s conclusion, after having admitted the above fact, is curious. In the very next page, he says, : “ Upon the whole, I “ think we are warranted to conclude, that if the vaccine “ scab or crust really possesses the power of imparting “ the complete effect of vaccination to the system, *to “ the same extent* with the limpid virus, it is not only “ in direct contradiction to general experience and ana- “ logy, but also clearly evinces the *imperfection and “ inconsistency* of the whole subject!!” See page 117.

At page 290., Mr BROWN states, that smallpox, after vaccination, have occurred in numerous instances at Dunkeld, Haddington, and some other places, and mentions particularly a case which occurred lately at Dunkeld, in which the smallpox proved fatal. The Surgeons happen to be acquainted with the circumstances of this case, and think that Mr BROWN would have



done well to have inquired into them more particularly before publishing his account of it. The child was vaccinated by *an old woman, a country midwife*. The father of the child was convinced, that the inoculation did not take effect in a proper manner ; but neglected to have it repeated, and the child died of smallpox. Several others who were vaccinated by the same woman, have also taken the smallpox. The Surgeons have also heard of some children in the neighbourhood of Haddington who have taken the smallpox after being inoculated for the cowpox *by a servant*. Such occurrences, no man of candour or common sense will ever consider as operating to the prejudice of vaccination.

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TO

## APPENDIX.

*to*  
*Mr Bryce's Book on Cowpox*

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the British Empire, and for rendering the Vaccine Inoculation general and effectual.—Bill as amended in the Committee of the House of Commons for preventing the spreading of the infection of Smallpox—Objections to that Bill.—Objections to the Clergy of Scotland engaging generally to conduct Vaccination.

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# APPENDIX.

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## No. I.

*See page 24 First Edition*

**D**R JENNER's opinion concerning the origin of the Cow-pox has been farther confirmed by observations made by Dr Sacco of Milan. This gentleman at one time not only doubted the validity of Dr Jenner's opinion concerning the origin of the cowpox, but imagined that he was in possession of facts tending to overthrow it completely. However, a singular circumstance happened to convince the Doctor of the fallacy of his former observations. One of his coach horses had the common malady of the heel ; his coachman attended to the sore, and presently exhibited several pustules upon his hands, with all the characteristic marks of those derived from the cow. It was deemed too late to take matter from them for inoculation ; but soon after this a similar case occurred on the fingers of a coachman of another gentleman in Milan. From these pustules Dr Sacco inoculated nine children and a cow. Three of the children were infected, and had the disease exactly in the same way as if it had been communicated from the cow. With matter taken from these children, other inoculations were performed ; and at the time that this account was transmitted, it had reproduced itself

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correctly a fourth time. Dr Sacco also adds, that he had inoculated six other children with the matter of grease, and that on two of them it had produced pustules with all the genuine characters of the vaccine \*. Some of this matter of grease as taken directly from the horse was sent by Dr Sacco to Dr De Carro at Vienna, and to Dr Friese, director of vaccination in Silesia; in the hands of both these gentlemen it was equally successful as with Dr Sacco. And we are informed that they now inoculate with equine, or with vaccine matter indiscriminately, being fully convinced of their identity †.

It is mentioned by Dr Joseph H. Marshall, that being called to visit a young woman, who was dairy-maid at a farmer's, he found her in bed complaining of a pain in her back, lassitude, and thirst. The face was flushed, and the tongue foul. Upon requesting her to give him her arm, he discovered upon the hand four or five large pustules, which, from his knowledge of the disease, he immediately ascertained to be the cowpox. "On the back of the hand there had evidently," he observes, "been a long scratch, on a part of which had been the primary pustule; the others were very near it."—"Upon making a strict inquiry," he adds, "I found that one of the cows had this disease, and that in several of the others it was also advancing. On farther inquiry, I also found that the farmer had a horse with sore heels in the stable, which his son always attended, who did not usually milk the cows, but that, one morning this cow being troublesome and restive, he had, to relieve the dairy-maid, milked her himself ‡."

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\* Medical and Physical Journal, vol. x. page 93.

† Vide *u. s.* vol. xvi. page 245.

‡ Memoirs of the Medical Society of London, Vol vi. art. 9.

“ In the latter end of April 1806, the cowpox appeared at  
“ a farm in Dr Jenner’s neighbourhood. The disease was  
“ regularly traced from a horse’s heel in the farm to the boy  
“ who dressed him, and from him to the cows. Dr Jenner  
“ sent notice of this event to Dr Adams of the smallpox hos-  
“ pital, who, it will be readily supposed, would not lose this  
“ opportunity of tracing a morbid poison. Dr Adams passed  
“ the night at Berkley that the succeeding day might be devoted  
“ to their inquiries. In the morning, the two physicians,  
“ with the farmer, met at the farm. All the cows were exhibited;  
“ the farmer being present, who gave the history of the  
“ event with much simplicity, though with tolerable severity  
“ when he came to describe the inattention of the boy. The  
“ boy afterwards appeared in his own defence, and urged that  
“ he had only milked two of the cows after the injunction he  
“ had received. Unfortunately these were afterwards mixed  
“ with the herd, and became infected before they were suspected,  
“ in consequence of which the milkers carried the  
“ infection to all the rest. It was not a little curious to remark  
“ those cows which had suffered on a former occasion,  
“ and who were easily distinguished by having the disease in  
“ a milder form. Dr Adams brought some of the matter to  
“ town with him, and has since used it in the hospital, to see  
“ whether it were possible to distinguish between the effects  
“ of matter immediately from the cow, and after it has been  
“ for four or five years inserted only in the human subject,  
“ but no difference could be perceived \*.”

Mr Ring informs us, that the late Mr Davy shewed Dr Jenner and him an instance in which vaccine matter succeeded when inserted into the heel of a horse †.

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\* See Medical and Physical Journal for June 1806.

† *Vid. ut supra.* Vol. xii. page 536.



Mr Shoolbred of Calcutta has ascertained, that the cowpox is not indigenous amongst the cows in India, and was totally unknown to the Bramins in that country until introduced from Europe in the year 1802. He says, “ No farther information has been obtained respecting the knowledge of vaccine inoculation, pretended to be possessed in India by the Bramins anterior to Dr Jenner’s discovery : and there seems to be no doubt but the attempt to establish such a belief upon the authority of an interpolated passage of a Shanscrit book was a palpable imposition, contrived for no other purpose than to support the pretensions of the Bramins to the early possession of all useful and scientific knowledge\*.”

As far as I have been able to learn, the cowpox has not been found upon the cows in any part of Scotland ; although eruptions very much resembling that disease are frequent : With fluid taken from vesicles on the hands of persons who had been infected by milking cows with eruptions on their teats, I have repeatedly inoculated the human subject ; but have never been able to produce any vesicle which had the characteristic appearance of the cowpox. It is worthy of remark, that neither in India, nor in Scotland, have persons employed to take charge of the horses any communication with the cows.

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\* See Report on the State of Vaccination in Bengal, page 50.

## NO. II.

*See page 57*

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ACCORDING to my observations, in conducting vaccination, it appears, that if any constitutional morbid action be begun and finished during the local action of the cowpox infection, (i. e. during the period between the time of inoculation and the beginning of the constitutional affection), the regularity in the appearance, and in the progress of the vesicle, may be considerably disturbed and retarded, but the local affection will afterwards assume the regular appearance, and vaccination will be complete. But, if the constitutional morbid action be present, when the constitutional vaccine action should begin, and be continued for five or six days after that period, the action of the cowpox contagion, having proceeded until the vesicle has attained its full size, will then be arrested in its progress, the virus will be gradually dried into a crust, and no constitutional vaccine action will be induced.

If, during vaccination, the contagion of the smallpox (and the same thing seems to obtain with respect to other mor-



bid poisons,) has been present in the constitution such a length of time as that the constitutional affection from the two poisons should take place at the same time, the constitutional affection which takes place will be either that from the cowpox or that from the smallpox, according to circumstances which we cannot explain. If this constitutional affection, however, be slight, and soon passes over, or if the two morbid poisons have been present in the body such a length of time as that the constitutional affection from each should take place in close succession, *and if the first be not very severe or long continued*, then a constitutional affection from each of the morbid poisons will take place successively\*.

But if the constitutional affection from smallpox shall appear first, and be very severe, or continued above five or six days, the cowpox vesicle, after attaining its full size, will be dried up, and no constitutional vaccine action will take place; of which the following case, amongst many others of the same kind which I have seen, is a proof. — Jack, æt. eight months, was inoculated at the Dispensary on the 21st of November 1807, after having been for six days exposed to variolous contagion from a sister labouring under a very full crop of the casual smallpox. On the 25th the inoculation had taken effect, but the progress appeared rather slow; she was therefore re-inoculated.—28th, The vesicles from the first inoculation were well formed, but not quite so far advanced or large as is usual at this period, and

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\* See the cases of the Nelsons mentioned at page 43, in which the natural smallpox appeared immediately after the constitutional affection of the cowpox; and the cases of the children mentioned at page 193 et seq. in which the constitutional affection of the cowpox immediately succeeded the constitutional affection of the smallpox, by which the former had been for some days retarded. I have had frequent opportunities of seeing cases similar to those above referred to since the publication of the first edition of these observations.

there was no appearance of an areola. The second inoculation had also taken effect. On the preceding night the child was observed to be feverish, and this day a copious eruption had appeared on the face and body.—29th, The vaccine vesicles are larger than yesterday; the eruption more numerous, and evidently the smallpox.—30th, The vaccine vesicles are now stationary, and there is no appearance of an areola.—The eruption advancing regularly, and is very numerous; still considerable fever present.—December 2d, The vaccine vesicles are drying up—no areola has ever been formed—smallpox pustules very numerous; and a considerable degree of fever present.—December 4th, Vaccine vesicles quite dried up, and the crusts are becoming loose; no areola nor hardness around the vaccine vesicles has ever been observed.—Pustules of the smallpox suppurating.



## NO. III.

*Supra page 65*

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THE superiority of the cowpox over the smallpox is still greater in the warm climates than in these more temperate regions, for while, in the former, the cowpox retains all that mildness with which we are accustomed to observe it in this country, the smallpox is there greatly more severe and fatal. "The Brahmins," says Mr Shoolbred, "who practice inoculation for the smallpox, acknowledge that they lose one in about two hundred; and the mortality from the smallpox caught in the natural way in India has been estimated at one in three who have the disease among the natives. Inoculation for the smallpox on children born of European parents in India," he adds, "is certainly much less favourable here than in Europe. In Europe one in 300 only dies; here," in India, "I believe I shall not err much if I say one in sixty or seventy. The great risk which thus attended variolous inoculation kept families every year in a state of inexpressible trouble and anxiety during the months in which the smallpox prevailed; and

“ the duties of the medical practitioner during this time be-  
“ came of course peculiarly harrassing and laborious\*.”

Since the publication of the first edition of these observations, the numbers inoculated for the cowpox, in all quarters of the globe, must amount to many millions, while the instances of severe symptoms, or of any inconvenience arising from these inoculations, are so rare as scarcely to deserve being mentioned.

From the Report of the Royal College of Surgeons of London, it appears that out of 164,381 persons vaccinated, 56 are said to have been afterwards infected with the smallpox, 66 are reported to have had eruptions on the skin, and 24 to have had inflammation of the arm, of which three proved fatal†.

These failures and other untoward symptoms may be fairly attributed to various circumstances which, as practitioners become better acquainted with the appearances of the vaccine disease, and the laws by which its action on the human constitution is governed, will very certainly be obviated. With regard to the inflammation on the arm, this, I apprehend, cannot be fairly laid to the charge of cowpox; the same thing occasionally takes place in the inoculated smallpox, and in this respect the two diseases may be said to be upon an equality. In either of these diseases, however, I apprehend that any severe inflammation occurring at the inoculated part is rather to be attributed to other circum-

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\* See Report on the progress of vaccine inoculation in Bengal from the period of its introduction in 1802 to the end of the year 1803, by Jo. Shoolbred superintendant general of vaccine inoculation, page 19.

† See Report of the Royal College of Physicians of London on vaccination, Appendix page 11.



stances than to the peculiar action of the virus used for inoculation. Thus, from a particular state of the constitution, we find that the bite of a leech, the prick from a thorn, or even the scratch from a pin, will produce inflammation, erysipelas, and mortification, terminating in death; yet we cannot, in just reasoning, attribute this fatal termination to such a wound; but admitting that the inflammation in the above instances was altogether excited by the vaccine contagion on irritable constitutions, how much more certainly would the same inflammation have been induced by the more sharp and acrid virus of the smallpox.

The most severe inflammation, or sore arm, which I have ever seen after vaccination, was in a child that had been inoculated at the Dispensary here during the autumn of 1806. The child had been regularly brought to the Dispensary for examination during the progress of the affection, and was dismissed on the 14th day from inoculation. The mother went immediately after this to assist in the harvest, and carried her child along with her. The child, as the mother informed us, was laid down upon a coat or blanket upon the corn stubble, and had rolled about so as to injure the arm with the stubble by rubbing off the crust prematurely, thus irritating the part so as to induce inflammation, which was aggravated perhaps by exposure to frosty air, and a repetition of the same irritation for some days successively. When the child was brought to me about six or eight days after he had been dismissed from the dispensary, at which time I am perfectly certain the arm would have been quite well had it not been rubbed, &c. as above mentioned, there was a most violent degree of inflammation over the whole arm, extending from the points of the fingers over the whole of the shoulder and neck of the same side, but particularly severe over the shoulder. An ulcer of the size of a shilling occupied the place of the vaccine crust, and discharged a great quantity

of a thin watery matter, and there was present a very great degree of fever. By the application of proper remedies the tension, pain, and swelling gradually diminished, and in the course of eight days the arm was again quite well. Had the mother in this case continued to neglect her child for one or two days longer, it is almost certain that the arm would have mortified, and perhaps the child would have died; but had this been the case, is there any unprejudiced mind that could have in justice attributed such an event to vaccination? even the mother of the infant herself was sensible of the true cause, and confessed and sincerely regretted her own carelessness.

Many marvellous stories and descriptions of hideous and obstinate eruptions, and other dangerous diseases, said to have been caused by vaccine inoculation, or, in the words of the authors of these ridiculous reports, "by the introduction of bestial humours into the human constitution," have been fabricated and industriously circulated by interested and designing men, tending to shake our faith in the antivariolous power of the cowpox, and to prejudice the minds of the people against this mild preventive of smallpox; that these, however, have no foundation in truth may be collected from the following testimonials. Dr Willan of London, a gentleman who is well known to have made cutaneous diseases the particular subject of his most minute investigation for many years past, and who has deservedly acquired much fame for his accurate observations in this field of medical research, informs us, that he has "carefully examined, with different physicians and surgeons, various cases of cutaneous eruptions attributed to vaccination, Instead of the mange or any eruption communicable from quadrupeds to the human skin, we have constantly found diseases which were known and have been fully described by medical writers more than a thousand years ago." And as a proof that the cutaneous diseases formerly known have



not become more general in consequence of vaccination, he has favoured us with a table extracted by Dr Bateman from the register of patients at the public Dispensary in London, from which it appears that the proportion of cutaneous to other diseases was rather greater before the publication of Dr Jenner's discovery than in the sixth and seventh year of vaccination. And nearly the same proportion, Dr Willan informs us, may be deduced on comparing Dr Murray's, Dr Reid's, Dr Walker's, and his own reports on the diseases in London during the last ten years. Dr Willan also gives it as his decided opinion, that the vaccine inoculation is much less liable to excite inflammation and suppuration of the glands than either the natural or the inoculated smallpox\*.

This ample testimony afforded by examining the registers of the Dispensaries, &c. established in that very city from whence have been propagated so many reports prejudicial to vaccination, must be held by every unbiassed mind as decisive of this important question concerning eruptions caused by vaccination. How far the above opinions accord with the observations of medical men in other cities may be collected from the following evidence: Mr Trye, senior, surgeon to the infirmary at Gloucester, the very county in England in which the cowpox was first noticed, and in which it is perhaps more prevalent than in any other, informs us :

1st, "That a more healthy description of human beings does not exist, nor one more free from chronic cutaneous impurities than that which suffers most from cowpox, by reason of their being employed in dairies." And,

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\* Vide Willan on Vaccination, page 81, et seq.

2d, "That the Gloucester Infirmary, one of the largest provincial hospitals, is situated in a county in which accidental cowpox has been prevalent from time immemorial. Many hundreds among the labouring poor have had that cowpox since the establishment of this institution, and that *more severely than is generally the case in artificial vaccination, and yet not a single patient, in half a century, has applied to the infirmary for the relief of any disease, local or constitutional, which he or she imputed or pretended to trace to cowpox.* And be it repeated and remembered, that the *artificial* in no respect differs from the *accidental* cowpox, except in being generally less virulent \*."

In the Report of the surgeons of the vaccine institution at the public Dispensary of Edinburgh for 1805, it is stated, that, "In consequence of some recent publications against vaccination, particularly asserting that it operates as a preventive of smallpox only for four years, and that it produces new and dangerous diseases, the surgeons have lately examined personally a great number of those children who were inoculated at this institution in the beginning of the year 1801, and have found that many of them have within these three months been freely exposed to the contagion of the natural smallpox, in several quarters of the city where this loathsome disease has unfortunately been very prevalent, without having been infected; *and they beg particularly to notice, that they have not found one single instance in which obstinate eruptions, or any new and dangerous disease has been produced, in consequence of the introduction among mankind of this mild preventive of the smallpox.*" And this statement is further confirmed by the whole members of the Royal College of Surgeons of Edinburgh in their Report to the College of Physicians of London, on the subject of vac-

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\* Vid. Medical and Physical Journal, vol. xv. page 303.



cination, bearing date the 3d of March 1807, seven years after the vaccine inoculation had been introduced, and had been commonly practised amongst all ranks of the inhabitants of that city. In this report it is said, "The members of the Royal College have met with no occurrence in their practice of cowpox inoculation which could operate in their minds to its disadvantage; and they beg leave particularly to notice, that they have seen no instance of obstinate eruptions, or of new and dangerous diseases, which they could attribute to the introduction among mankind of this mild preventive of the smallpox \*."

In consequence of a message from the House of Commons, his Majesty was pleased to command that the Royal College of Physicians of London should inquire into the state of vaccine inoculation in the United Kingdom, and report their opinion and observations on that practice, upon the evidence which has been adduced in its support, and upon the causes which have hitherto retarded its general adoption.

The Royal College did accordingly, after a full and impartial investigation of the subject, make a report highly favourable to the practice of vaccination. On the particular point now under consideration, the College thus express themselves. "The testimonies before the College of Physicians are very decided in declaring that vaccination does less mischief to the constitution, and less frequently gives rise to other diseases, than the smallpox either natural or inoculated."

"The College feel themselves called upon to state this strongly, because it has been objected to vaccination, that

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\* Vid. Report of the College of Physicians of London on Vaccination, Appendix, p. 12.

“ it produces new, unheard of, and monstrous diseases. Of  
“ *such assertions no proofs have been produced, and after dili-*  
“ *gent inquiry, the College believe them to have been either the*  
“ *inventions of designing, or the mistakes of ignorant men* \*.”  
“ Representations of some of these (diseases) have been exhi-  
“ bited in prints in a way to alarm the feelings of parents,  
“ and to infuse dread and apprehension into the minds of the  
“ uninformed. Publications with such representations have  
“ been widely circulated; and though they originate either in  
“ gross ignorance, or wilful misrepresentation, yet have they  
“ lessened the confidence of many, particularly of the lower  
“ classes, in vaccination; no permanent effects, however, in  
“ retarding the progress of vaccination need be apprehended  
“ from such causes, for as soon as the public shall view them  
“ coolly, and without surprize, they will excite contempt and  
“ not fear†.” May this opinion soon be verified.

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\* Vide Report, p. 4.

† Vide *ut supra*, p. 6.



## No. IV.

*See page 79*

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SINCE the publication of the first edition of these observations in 1802, much controversy has taken place amongst medical men concerning the efficacy of vaccination to prevent the future attacks of smallpox on the human constitution. Instances in which this new inoculation has been supposed to fail in giving the desired security have been diligently sought after; and, without having undergone that calm investigation which should always attend the search after truth, have been blazoned forth to the world in publications, written apparently with very different motives than that of elucidating an important point in the science of medicine, upon which the happiness or misery of millions of our fellow-creatures was to depend. For an ample detail of all the circumstances attending this vaccine controversy, and for a clear and impartial summing up of the evidence on both sides of the question, I must beg leave to refer my reader to the Edinburgh Review for October 1806, Art. iii.

In consequence, however, of the many idle and ridiculous stories which still continued to be circulated, tending to

shake the faith of the public in the advantages to be derived from vaccination, this new inoculation began to be viewed with a jealous eye in many places, and particularly in London, and the neighbourhood, where it has been for eighteen months past nearly at a stand, and where the smallpox has again spread its desolating contagion with almost unexampled fury, insomuch, that public institutions have there again been opened for the inoculation of the smallpox, and the interference of parliament has again been thought necessary.

In consequence of a message from the House of Commons, his Majesty was pleased to command that the Royal College of Physicians of London should enquire into the state of vaccination in the united kingdom, and report their opinion and observations on that practice, upon the evidence which has been adduced in its support, and upon the causes which have hitherto delayed its general adoption.

The Royal College did accordingly, after a full and impartial investigation of the subject, make a report highly favourable to vaccination, in which they conclude: “ From  
“ the whole of the above considerations, the College of Physicians feel it their duty strongly to recommend the practice  
“ of vaccination. They have been led to this conclusion by  
“ no preconceived opinion, but by the most unbiassed judgment, formed from an irresistible weight of evidence which  
“ has been laid before them. For, when the number, the respectability, the disinterestedness, and the extensive experience of its advocates, is compared with the feeble and  
“ imperfect testimonies of its few opposers; and when it is  
“ considered that many, who were once adverse to vaccination, have been convinced by further trials, and are now  
“ to be ranked among its warmest supporters, the truth seems  
“ to be established as firmly as the nature of such a question admits; so that the College of Physicians conceive that the



“ public may reasonably look forward with some degree of  
“ hope to the time when all opposition shall cease, and the  
“ general concurrence of mankind shall at length be able to  
“ put an end to the ravages at least, if not to the existence  
“ of the smallpox \*.”

In consequence of this report, so very favourable to the practice of vaccination, the British parliament, as a token of the sense of a grateful people to their benefactor, and in some degree to express their estimation of one of the most valuable discoveries that ever appeared in the world, voted to Dr Jenner, the author of this discovery, L.20,000 in addition to L.10,000 formerly granted him with the same liberal intention †.

To enable us still farther to form an opinion concerning the efficacy of the cowpox, as a sure preventive of the smallpox, let us next take a short view of the progress of vaccination in situations in which it has been less fettered by opposition than it has been in the bosom of its own country ; and from thence let us judge whether it merits the encomiums conferred on it by the Royal College of Physicians, and acquiesced in by the British Parliament as above mentioned.

In the year 1800, Dr Woodville went to Paris, and first introduced the practice of vaccination into France. In that country, as well as in this, the practice at first met with opposition ; in 1802, however, the annual report of the central committee of vaccination declared its success ; and the report of the same committee in 1804 shows that the practice of

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\* Vid. Report of the College of Physicians of London on Vaccination.

† See Proceedings in the House of Commons, 29th July 1807.

vaccination in France was then fully established. The business of vaccination in France appears at an early period to have been taken under the protection of the state, and all the energies of the French government were called forth to render the practice general and effectual.

The minister of the Interior instituted a society for the extermination of the smallpox, by rendering vaccination general, of which he is himself the president, as appears by the following decree.

“ The minister of the Interior considering, that the advantages of vaccination have been sufficiently ascertained by the numerous experiments made or collected by the central committee established at Paris, and by the National Institute ; that this method, already practised with success in almost every part of France, only requires a uniform and regular mode of propagation, in order to obtain every degree of extension of which it is susceptible, has issued the following decree : There shall be at Paris, near the minister of the Interior, a central society of vaccination, of which the minister shall be president \*,” &c. He then addressed circular letters to the prefects of the different departments, inviting them to promote, by all the means in their power, vaccine inoculation : “ The immense advantages of which, for the increase of population, and the welfare of mankind, are so completely demonstrated.” Committees of vaccination, composed of the most intelligent medical practitioners, were consequently established by the prefects in every department, and a regular and frequent correspondence is maintained between these and the central society of vaccination.

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\* See Med. and Phys. Journal, vol. xiii. page 424.



From the communications received from the vaccine committees of the different departments, an annual report is made by this society upon the labours undertaken in France for the propagation of vaccination. From the report of this society, made on the 12th June 1806, it appears that vaccination at that time not only maintained its character in that country, but that it was daily becoming more popular and more anxiously sought after by all ranks of the people. “Après six ans d’expérience en France, il reste toujours constant que cette précieuse méthode, bien employée, n’a rien de nuisible ni de dangereux : et que la vraie vaccine préserve de la petite vérole, et qu’en outre elle est encore utile dans plusieurs cas d’infirmités et de maladies.”

From this report, it appears that nearly 400,000 persons were vaccinated in the year 13, in the French dominions; of these many have been exposed to the contagion of the smallpox by inoculation, and others by an intimate communication with persons labouring under that disease, even under the form of a severe epidemic, yet they have uniformly resisted its influence.

It appears also, by this report, to be fully established, that in those departments of France in which vaccination is generally practised, the smallpox is much less frequent than formerly; in some altogether exterminated; and that there is also in them a very manifest decrease in the bills of mortality. Vide Séance général de la société centrale, établi pour l’extinction de la petite verole en France, par la propagation de la vaccine. Tenue, le 12 Juin 1806.

In Spain the knowledge of vaccination was received with avidity, and the practice has, in that country, been followed with the happiest success. Vaccination also appears to have been taken under the protection of the government in Spain at an early period; and in such estimation was

it held in that kingdom, "that in all the royal ordonnances "relative to that subject, its worthy author was styled the "Immortal Jenner." Vide Debates in Parliament respecting the Jennerian discovery, p. 52.

It appears also, that the Spanish government, sensible (from experience) of the great advantages resulting from vaccine inoculation, did fit out, at considerable expence, an expedition for the sole purpose of carrying this inestimable gift to all the possessions of the crown of Spain beyond the seas. Dr Francis Xavier Balmis surgeon extraordinary to the king, who had the charge of this expedition, sailed from Corunna in November 1803; and after introducing the practice of the vaccine inoculation into all the Spanish possessions on the western continent, into the Visayan and Philippine Islands, and also into several other nations, returned to Spain in September 1806. The particulars of this very interesting expedition are published in the Supplement to the Madrid Gazette of 14th October 1806. See some account of it in the Debates in Parliament, *u. s.* p. 121.

From the great trouble and expence necessarily attending an expedition of this kind, we may in some measure judge of the degree of estimation in which this new inoculation was held by the inhabitants of that country, by which such an expedition was fitted out: and that the sanguine hopes they entertained, with regard to the great advantages to be derived from it, will not be disappointed, we have the satisfaction of knowing from the following article in the Frankfort Journal for February 1806. "The reports of several committees of "vaccination established in Spain, as well as in the New "World, reports which are all accompanied with attestations "delivered by the civil and judicial authorities, unanimously confirm the happy result of this salutary practice. The natural smallpox, which almost every year



“ desolated Mexico and Peru, has lost its malignity in those  
“ climates, to such a degree, that the number of children  
“ who fall victims to that scourge, is reduced in the propor-  
“ tion of nine to one.”

By an examination of the bills of mortality in Vienna for ten years, viz. from 1791 to the 31st December 1800, the average number of deaths in that city was 14,600 annually; of which number 835 were from the smallpox. In 1801, after the vaccine inoculation was introduced into that capital, only 164 persons died from smallpox. In 1802, the number of deaths from this cause was only 61. In the year 1803, only 27; and in 1804, out of 14,000 deaths, only two were from the smallpox\*; and since that time, Dr De Carro, an eminent physician in that city, writes, “ That the smallpox is utterly unknown among the people  
“ in Vienna, and is there considered as being completely  
“ exterminated.” Med. and Phys. Journal, No. 81. p. 409.

In the Madras Government Gazette, dated December 19th 1804, it is mentioned that by the last returns 216,000 persons had been vaccinated in that settlement; and 26,000 in Ceylon; and so much were all ranks of the people satisfied with the great advantages resulting from this new inoculation, that it was proposed to establish fixed and permanent institutions, so that every village might have the advantage of vaccine inoculation within itself.

In the East Indies some millions of persons have been vaccinated. “ In Bombay such has been the success of  
“ vaccination, that the smallpox is totally extirpated;”  
and “ at Ceylon that disease has been so far subdued, that  
“ the hospital formerly appropriated to receive persons in-  
“ fected with the smallpox, is now given up for the use of

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\* Vid. Séance général de la Société central, n. s. p. 66.

“ the army.” “ In Swedish Pomerania the mortality from smallpox has been diminished, in the proportion of fourteen to one, from 700 yearly, to less than 50.”—“ These facts are stated on the best authorities.” Vide *Debates in Parliament*, *u. s.* page 125.

I am informed by Dr Dinwiddie, who left India about the beginning of the year 1807, a gentleman of much general science, and an intimate acquaintance of the superintendant general of vaccination in Bengal, that inoculation for the cowpox has become very general in that country, and is attended with every possible success; and that failures in giving security against the smallpox by vaccination are there totally unknown.

When the Russian Court was at Moscow in 1801, the vaccine inoculation was first practised there on a child, who was afterwards called *Vaccinoff*; since which time, it has been generally practised and established throughout the Russian empire; and as a mark of the estimation in which that practise is held throughout that extensive empire, the University of Wilna in November 1804, after three years experience of the new inoculation, did confer on Dr Jenner an honorary diploma in testimony of their opinion with regard to vaccination, and of the advantages which may be derived to society from his invaluable discovery. See *Med. and Phys. Journal*, vol. xiii. page 428.

In the summer of 1802, the vaccine inoculation was first employed at Copenhagen; and soon became so general, that in the succeeding years, the bills of mortality for that city returned none as dying of the smallpox. *U. s.* vol. xviii. page 28.

I am told by Dr Stedman physician on the island of St Croix, in the West Indies, that such has been the success of



vaccination in the Danish dominions, that inoculation for the smallpox has been prohibited by a proclamation of the Danish government, not only in Europe, but also in the West India Islands. In St Croix, where vaccination goes on with great success, this prohibition was proclaimed about three years ago. Dr Stedman also informs me that the smallpox, even by inoculation, was often extremely fatal in St Croix; and that vaccination is there esteemed as one of the greatest blessings.

Sir George Staunton having translated into the Chinese language a treatise on the vaccine inoculation, which was drawn up by Mr Pearson surgeon to the English Factory in China, a general inoculation for the cowpox had in consequence taken place in the populous city of Canton; and so far have this jealous people got the better of their prejudices, in this instance, and so confident are they become of the efficacy of vaccination as a preventive of the smallpox, that a very large subscription has been raised for establishing an institution in the city of Canton; by means of which the inoculation is to be spread into the neighbouring country, and the disease disseminated into every province of that vast and populous empire\*.

It is not meant to deny that many instances have occurred in which persons have been attacked with the smallpox after they had been inoculated with the cowpox, and after they had, in the opinion of the persons who conducted the inoculation, undergone the antivariolous process in a regular and effectual manner. But I wish it also to be remembered, that for some years after the discovery of this new inoculation, many surgeons undertook this practice without having studied, or in any way having made themselves

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\* Vid. *u. s.* vol. xvi. page 96.

acquainted with the symptoms and regular progress of the affection ; and that, in a vast number of instances, persons not of the medical profession, and very ignorant concerning the nature of the disease, took upon themselves to inoculate for the cowpox. What wonder then, if, under such circumstances, failures should then, and even now amongst persons who were at that time inoculated, frequently occur? Besides it very frequently happens in public institutions for the gratuitous inoculation of the cowpox, and in private also, when the operation is gratuitously performed, that, from the carelessness of parents, &c. in not returning with their children for examination, the progress of the affection is in many cases wholly unknown to the inoculator. The process may have been complete; but it may also have entirely failed; and the patient may afterwards be attacked by the smallpox. The cowpox will thus be very unjustly blamed for having failed to give the promised protection; and the parents, willing to screen themselves from the imputation of neglect, join in discrediting the efficacy of the new inoculation; and, though, well knowing where the fault lies, tacitly acquiesce in whatever is said to its prejudice. The instances in which my colleagues, at the institution for the gratuitous inoculation of the cowpox here, and myself, have experienced the truth of the above statement, as giving rise to erroneous reports respecting vaccination, are very numerous; many of these reports have cost us much time and trouble to investigate; but we have generally succeeded in expiscating the facts, so as to give us satisfaction, by removing all blame from vaccination.

Again, although it be freely admitted that many instances have occurred, in which persons have suffered an attack from the smallpox after they had been inoculated for the cowpox, and even after they had, in the opinion of the persons who conducted the inoculation, undergone the antivariolous process in a regular and effectual manner; yet it must, at the



same time, be kept in remembrance, that there are many instances on record, in which persons have at one time resisted the constitutional action of the smallpox, though freely exposed to the infection of that disease, both by effluvia and by inoculation, and have at another subsequent time suffered from it very severely; and also, that there are many instances on record, in which persons have been affected with the smallpox in a very severe manner, although they had at a former period actually been infected, and passed through all the stages of that disease; and these second attacks of smallpox have taken place after the casual disease, as well as after it had been communicated by inoculation. But why this susceptibility of a second attack from the smallpox should exist in some constitutions and not in all is a question, for the solution of which physicians have not yet even hazarded a conjecture; that the fact, however, is so, appears from many well authenticated instances, recorded in the *Annals of Medicine*, long before the discovery of vaccine inoculation. At page 63, note, I have referred to several cases of smallpox, which had occurred a second time in the same person; I shall here beg leave to state some instances in detail.—Dr Plowden of Arundel gives the following:

“ In the year 1738, the smallpox committed its furious ravages in this place, and is said to have destroyed one out of every seven whom it attacked. Amongst the numbers infected was William Birt, at that time about 18 months old. He recovered; and for the rest of his days, was a living monument of the havoc the disorder had made; I knew him well, and do not recollect many instances of a person more fretted and seamed by the smallpox than he was.

“ The marks he bore were deemed a sufficient security against any future infection of the smallpox. He was therefore appointed to attend on variolous patients in the pest-house; a kind of lazeretto at the skirts of the town.

“ One woman died of the smallpox in the house on the  
“ 15th February 1799, and another a few days after. Wil-  
“ liam Birt, the subject of your inquiries, sickened on the 28th  
“ of the same month, and the eruption appeared on the 4th  
“ day. I saw him on the 6th day of the disease, being sent  
“ for by the family to give my opinion on the possibility of  
“ its being the smallpox ; which none of them could believe  
“ from the evident marks of his having had the complaint.

“ On inquiry, I found that he had been exposed a short  
“ time before to variolous contagion, and that his disorder  
“ commenced with the symptoms usually attending the worst  
“ kind of smallpox. The eruption was confluent, and his  
“ throat was severely affected. He was removed from his  
“ house on the day that I visited him to the pest-house,  
“ where he died on the 12th day of the disease, &c. (Signed)  
“ WILLIAM PLOWDEN.” See Medical and Physical Journal,  
vol. xiv. page 404.

The following instance ought to be deemed perfectly satis-  
factory on this point. “ The child of Mr King, No. 3.  
“ Printers Street, Blackfriars, was inoculated for the small-  
“ pox at the Smallpox Hospital in March 1798. A pustule  
“ rose ; the patient sickened at the usual time, and was very ill  
“ three days ; after which an eruption took place, consisting  
“ of ten very large pustules, scattered over different parts.

“ Mrs King went to the hospital three times a-week for the  
“ space of three weeks, and had several doses of physic for  
“ the child. On the last day of her attendance, she was as-  
“ sured by Mr Waschel, resident surgeon at the hospital, that  
“ the child was safe, and she need not attend any more. Mr  
“ King confirms this statement in all the essential particu-  
“ lars.



“ The day after they last attended at the hospital, the child  
“ again sickened, and had a violent vomiting. Two days  
“ afterwards a very considerable eruption took place, which  
“ the neighbours supposed to be the measles. A few days  
“ afterwards, Mr Ridout was desired to attend the child ;  
“ and being informed that she had been inoculated at the  
“ smallpox hospital, thought it necessary to send for Dr  
“ Woodville. Dr Woodville saw her in the course of the  
“ day. He told Mr Ridout, it was a case of smallpox a se-  
“ cond time ; and the second instance he had seen in which  
“ there could be no doubt of the fact. On the next day,  
“ Dr Woodville informed Mr Ridout, he had consulted the  
“ register, and found that this child and fourteen others were  
“ inoculated from a man in the hospital who had the natural  
“ smallpox, and that all of them except one had taken the  
“ disease.” This child had the disease in a very severe man-  
ner, and was attended by Mr Ridout, Dr Woodville, and Mr  
Waschel, during nearly three weeks ; and all these gentlemen  
were satisfied that their patient had twice undergone the dis-  
ease of smallpox. (See Med. and Phys. Journal, vol. xiv.  
page 406.

Copy of a letter from the Earl of Westmeath to Dr Jenner, dated May 23. 1805.

“ Sir,—Understanding that a report has been circulated,  
“ which, if believed, would tend much to weaken that con-  
“ fidence which is at present so generally and so justly en-  
“ tertained by the public in your system of inoculation for  
“ the cowpox, namely, that my youngest son had taken the  
“ smallpox after having been vaccinated ; I think it but jus-  
“ tice to you to contradict the report, and to state for your  
“ satisfaction the real circumstances of the case, which are  
“ as follow :

“ When he was about two months old he was inoculated  
“ for the smallpox, in the Suttonian method, by a physician  
“ in Ireland, who has been generally successful in inocula-  
“ tion, and pronounced by him to be perfectly free from the  
“ risk of infection; notwithstanding of which he caught the  
“ infection about a fortnight since, and is now recovering  
“ from the natural smallpox. I beg to inform you at the  
“ same time, that my youngest daughter, who was vacci-  
“ nated by you about four years since, has not only been  
“ frequently exposed to the danger of infection, but was ac-  
“ tually inoculated for the smallpox without taking it. I  
“ have considered it incumbent on me to bear testimony to  
“ the efficacy of the vaccine system, as I consider the re-  
“ port relative to my son, which originated in misrepresen-  
“ tation, to have been circulated for purposes obviously  
“ prejudicial to that most useful and fortunate discovery.  
“ I request you will make any use of this communication  
“ which you may think necessary. I am, Sir,

“ Your obedient humble servant,

“ WESTMEATH.”

See Med. and Phys. Journal, vol. xiv. page 256.

Mr Thomas Wainwright at Duddley makes the following communication: “ A child of Mr Downing, then resident at  
“ Stourbridge, was inoculated in the spring of 1804, by an  
“ eminent surgeon of that place, for the smallpox, which  
“ the child had in a very favourable way. In May 1805,  
“ this child caught the smallpox and died. In the second  
“ and fatal attack of the smallpox, the attendance of the  
“ surgeon who inoculated the child in 1804 was required.  
“ He well recollected every circumstance that attended the  
“ inoculation of the child, and declares that the smallpox,  
“ in consequence of the inoculation, was perfectly regular,  
“ and such as he should in all cases have relied upon with



"implicit confidence." Med. and Phys. Journal, vol. xiv. p. 436.

The child of Dr Croft was inoculated by Dr Steigerthal, physician to King George I. He had the smallpox of the confluent kind in consequence of this inoculation, and yet had it again *very full* in the natural way twelve months after. This, says Dr Woodville, in his history of inoculation, p. 217. is a striking fact which has never been contraverted.

That the fact of persons who have had the smallpox being again attacked with the same disease, is not one that has only been lately noticed, appears from the writings of Jo. Baptista Burserius, *de morbis exanthematis febrilibus, &c.* in 1785, in which we are informed, that "They entertain an erroneous opinion who think that, after once having the genuine smallpox, the disposition of the body to receive that disorder is destroyed; for it appears from undoubted facts, and from the investigations of medical men of unquestionable authority, that not a few persons, after experiencing the complaint in the natural way or by inoculation, have afterwards been affected a second and even a third time." Vide Chap. III.

From the above evidence, no unprejudiced mind can hesitate to declare, that although it has been generally received as a true proposition, that persons who have once had the smallpox are thereby secure against all future attacks from that disease, yet that exceptions to that rule are clearly and distinctly marked. That these exceptions are more numerous than have generally been imagined, appears not only from the above passage in Burserius, but also from consulting the writings and observations of other respectable men. There are now before me nearly one hundred cases on record, in which the human constitution has suffered more or

less severely from a second attack of smallpox ;—in many of these the attack has proved fatal. Whoever wishes to examine more instances of this sort, may consult Mr Ring's Treatise on the Cowpox ; Mr Ring's Answer to Dr Moseley ; Moore's Reply to the Antevaccinists ; and also the 13th, 14th, and 15th vols. of the Med. and Phys. Journal.

When we thus find so many well authenticated instances of a second attack from the smallpox, we should be less surprised if we occasionally meet with instances in which that disease has succeeded to the cowpox ; and notwithstanding of the failures in vaccination which have hitherto been reported on any tolerable authority, we ought in justice to make the same conclusion with regard to vaccination, as has always been made with regard to the smallpox, namely, that persons who have undergone the full effect of inoculation with the cowpox may be considered as being secure against the attacks of the smallpox.

According to the report of the Royal College of Surgeons of London, which was made to the Royal College of Physicians of that place, it appears that of 164,381 persons vaccinated by members of that body, 56 were afterwards affected with the smallpox ; that is about one in three thousand ; a proportion certainly extremely small, when all circumstances are considered, and a number which, even allowing the proportion of failures to continue the same, would still render the practice of vaccination invaluable to society. For if we allow that 40,000 persons die annually from the smallpox in Great Britain and Ireland, and that this is one in 14 of all that are born in these countries, then  $40,000 \times 14$  gives 560,000 persons born, or that may be vaccinated yearly in the united empire ; and if one in 3000 be still left liable to the smallpox after vaccination, 187 only will remain unprotected ; of which number, allow that one in 14



shall die from the smallpox \*, then will 13 persons only suffer annually in Great Britain and Ireland, from the smallpox in place of *forty thousand*.

But as there can be no doubt that several of the above mentioned failures may be fairly attributed to the inexperience of inoculators, it may with reason be expected that farther observation and investigation of the laws by which the action of the vaccine contagion in the human constitution is governed, will yet lead to improvements in the practice, and furnish the means of determining with still greater precision when the inoculation has been complete. On the other hand, however, it must be remembered, that, in order to obtain such immunity, or diminished mortality from the smallpox throughout the British empire, as has been stated above, it will be necessary that the practice of vaccination be taken out of the hands of the ignorant and inexperienced, and be generally confined to persons equally well qualified to conduct it as those members of the Royal College of Surgeons of London, from the result of whose practice the above proportions have been taken; and I shall, in a future part of these observations, endeavour to point out how this may be best accomplished.

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\* This is thought a large allowance when it is considered that the smallpox, succeeding to vaccination, is generally greatly milder than when the person has not been vaccinated; (See Report of College of Physicians,) and also, that from the rareness of smallpox, the whole of that number can scarcely be supposed to be exposed to its baneful contagion.

## No. V.

*Supra page 85*

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THE following outlines of a plan for extinguishing the contagion of the smallpox in the British empire, by rendering the vaccine inoculation general and effectual, was transmitted to his Majesty's ministers on the 2d June 1808, for their consideration. I insert it here for the purpose of obtaining farther observations on the practicability and propriety of putting it in force, and on the probability of its efficacy in accomplishing the object in view. It may be proper to premise, that I have submitted it to the examination of many respectable clergymen of various persuasions, who have uniformly approved of it, and cheerfully offered every assistance in their power towards carrying it into effect. It has also been submitted to the examination of men learned in the laws of our country, and to others high in the medical profession, and from them also it has met with approbation. Still, however, certain regulations, better adapted, perhaps, to local circumstances, may be devised, whereby the whole might be rendered more complete; and as I am more and more convinced that some regular plan must ultimately be



had recourse to, in order to secure to society all the advantages which are to be derived from vaccination, I shall be grateful for such observations as may appear to be calculated for the improvement of that which I am now to propose.—

*Outlines of a Plan for Extinguishing the Contagion of the Smallpox in the British Empire, by rendering the Vaccine Inoculation General and Effectual.*

Many centuries have now elapsed since the smallpox became a principal source of destruction to the human race throughout every quarter of the known world. In some countries it has appeared only at uncertain intervals, spreading its desolating contagion with such rapidity as to exterminate whole tribes of people; while in others it has become as it were domesticated, following a more gradual though scarcely less certain course of destruction. On a fair and unexaggerated statement, three thousand lives in London, and in its immediate vicinity, and forty thousand in the united kingdom, are annually the direct victims of the smallpox, besides a great mortality which is occasioned by disorders consequent upon this disease. It is also estimated that in London alone, of those persons who survive the ravages of the natural smallpox, six thousand are afflicted either with blindness, deformity, or loathsome diseases, which render them miserable for life.

The inoculation for the smallpox, which was introduced into these realms nearly an hundred years ago, was deservedly reckoned one of the greatest discoveries of the healing art; as by this operation, if universally practised, the mortality from that disease might be greatly diminished. That this discovery, however, has not been attended with the expected benefit to the community at large, appears from this esta-

blished fact, that the bills of mortality show a greater proportion of deaths from the smallpox, during forty-two years since the practice of inoculation has been prevalent, and notwithstanding the improved mode of treatment of the natural smallpox itself, than for a like number of years previous to that discovery; the general average giving 72 in every thousand before the introduction of inoculation, and 89 in every thousand since that period.

Dr Jenner's invention of inoculating with the cowpox, as a safe and effectual preservative against this most cruel and destructive enemy of the human race, was therefore hailed; by the well-wishers of mankind, as a noble and a blessed discovery. The knowledge and the practice of vaccination soon became far more general than ever inoculation for the smallpox had been, and its efficacy was almost universally acknowledged—by the parliament of the British empire, in voting a remuneration to the discoverer—by many states on the continent of Europe, in prohibiting inoculation for the smallpox, and enforcing vaccination throughout their dominions; and, generally, by official reports from almost every country in the civilized world.

Under these circumstances, it certainly was reasonable to expect that this new species of inoculation should quickly become so general as entirely to supersede and exterminate the smallpox. In this, however, our hopes have been wonderfully disappointed, the smallpox having again for upwards of twelve months raged with almost unexampled fury in the metropolis of that very country in which the preventive of this disease was discovered. In the course of four weeks, in the 8th year of the Jennerian discovery (Dec. 1807) no less than 290 persons were destroyed by the smallpox, within the bills of mortality of the city of London, and vaccination had for twelve months been nearly at a stand; in so much that the interference of the legislature was again thought neces-



sary. In consequence of a message from the House of Commons, his Majesty was pleased to command that the Royal College of Physicians of London should enquire into the state of vaccine inoculation in the united kingdom, and report their opinion and observations on that practice, upon the evidence which has been adduced in its support, and upon the causes which have hitherto delayed its general adoption. The Royal College did accordingly, after a full and impartial investigation of the subject, make a report highly favourable to the practice of vaccination, in which they conclude, "From  
" the whole of the above considerations, the College of Physicians feel it their duty strongly to recommend the practice  
" of vaccination. They have been led to this conclusion by  
" no preconceived opinion, but by the most unbiassed judgment, formed from an irresistible weight of evidence which  
" has been laid before them. For when the number, the respectability, the disinterestedness, and the extensive experience of its advocates, is compared with the feeble and imperfect testimonies of its few opposers; and when it is considered that many, who were once adverse to vaccination,  
" have been convinced by further trials, and are now to be  
" ranked among its warmest supporters, the truth seems to be  
" established as firmly as the nature of such a question admits; so that the College of Physicians conceive that the  
" public may reasonably look forward with some degree of  
" hope to the time when all opposition shall cease, and the  
" general concurrence of mankind shall at length be able to  
" put an end to the ravages at least, if not to the existence  
" of the smallpox." See Report of the Royal College of Physicians of London on Vaccination, ordered to be printed by the House of Commons, 8th July 1807.

In considering the causes which have hitherto delayed the general adoption of vaccine inoculation, the Royal College, after stating the malignant and contemptible efforts of authors, and interested men, who have attempted to abuse

the ignorance and excite the prejudices of the lower orders of society against vaccination, add, "Though the College of Physicians are of opinion that the progress of vaccination has been retarded in a few places by the above causes, yet they conceive that its general adoption has been prevented by causes far more powerful, and of a nature wholly different. The lower orders of society can hardly be induced to adopt precautions against evils which may be at a distance; nor can it be expected from them, if these precautions are attended with expence. Unless, therefore, from the immediate dread of epidemic smallpox, neither vaccination nor inoculation appear at any time to have been general, and when the cause of terror has passed by, the public have relapsed again into a state of indifference and apathy, and the salutary practice has come to a stand. *It is not easy to suggest a remedy for an evil so deeply imprinted in human nature.* To inform and instruct the public mind may do much; and it will probably be found that the progress of vaccination in different parts of the United Kingdom will be in proportion to that instruction. Were encouragement given to vaccination, by offering it to the poorer classes without expence, there is little doubt but it would in time supersede the inoculation for the smallpox, and thereby various sources of variolous infection would be cut off; but till vaccination becomes general, it will be impossible to prevent the constant recurrence of the natural smallpox by means of those who are inoculated, except it should appear proper to the legislature to adopt, in its wisdom, some measure by which those who still, from terror or prejudice, prefer the smallpox to the vaccine disease, may, in thus consulting the gratification of their own feelings, be prevented from doing mischief to their neighbours."

To these causes, which have impeded the general adoption of vaccination, may be added another, which, the more



it is investigated, the more it will be found to obstruct the general practice of this new inoculation. From the circumstance of inoculation for the cowpox being in itself a very simple operation, and from little or no sickness attending the progress of the affection, vaccination has been too much practised by persons totally unacquainted with the laws by which the action of the vaccine contagion on the human constitution is regulated. Thus, the operation has been performed; and when nothing but a slight inflammation has been produced, this has been mistaken for the proper vaccine affection; or the vaccine inoculation has, by the presence of other diseases lurking in the constitution, been rendered merely a local affection; or it may have been, from the same causes, altogether prevented from taking place at the time; and these inoculators have, through ignorance, declared such persons to be sufficiently protected against the smallpox, or insusceptible of the cowpox. The consequences have proved such as might be expected, viz. too often fatal to the deluded patient, and highly detrimental to the interests of vaccination. Had vaccine inoculation been confined to Dr Jenner, and to other gentlemen who had directed their particular attention to the subject, and pursued it as one of the chief objects of their profession, as variolous inoculation was in the early part of its introduction into this country, to the Suttons, &c. we should not now have had to lament the many errors which have taken place regarding it, nor the many ridiculous stories which have been officiously circulated by interested individuals, to the prejudice of the discovery, and to the great detriment of the public.

Although the inoculated cowpox may indeed, *as a disease*, be regarded as trifling, and little deserving the attention of medical men in general, yet as a certain preventive of one of the most loathsome diseases which affect the human race, it is of much importance, and highly deserving of the most minute attention, from those who undertake to superintend

its progress. Until therefore there be generally understood and practised some means of obtaining an unequivocal mark of a constitutional affection, which does constantly occur during the course of the cowpox when effectual, and which may be as readily distinguished as the fever and eruption consequent to the inoculation of the smallpox, this new inoculation ought certainly to be performed by those alone, even of the medical profession, who are well acquainted with every appearance of the ailment.

In a treatise on the cowpox, published by me in 1802, I mentioned both of the above powerful causes as being likely to impede the general practice of vaccination; and proposed, for obviating the former cause, “that the inoculation for the cowpox should be taken under the consideration and direction of the legislative powers in every nation\*,” &c. And for the latter, (viz. to remove that degree of uncertainty which does frequently occur, concerning the actual presence of the antivariolous process in the constitution,) I stated, that “a test of the presence of a constitutional affection in cowpox,” was obtained by a second inoculation during the progress of the primary affection†, which, if universally understood and practised, would certainly do away in a great measure, if not entirely, all risk of error; but, until this test be generally practised, it is clearly proper and necessary, for the benefit of all concerned, that vaccination should be confined to these only, even of the medical profession, who, by making it their particular study, and by pursuing it as one of the chief objects of their attention, will therefore be better qualified to conduct it, and be more interested in its success.

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\* *Vide* Practical Observations on the Cowpox, page 84.

† *Vid. et supra*, p. 173 *et seq.*



I am fully aware of the establishment of many societies throughout the British Empire, several of which consist of the most respectable noblemen and gentlemen in the kingdom, for the purpose of propagating and rendering general the blessings of vaccination. But when it is considered that these societies depend entirely on the exertions of a few individuals, and more particularly that they provide no remedies against the powerful obstacles above mentioned, as impeding the general adoption of vaccination, it must be acknowledged that they are unequal to the accomplishment of the object in view.

From a knowledge of these circumstances, I have been induced to make out the following plan, which, to be effectual, must be sanctioned by a public act of the legislature; and now humbly submit it to his Majesty's ministers for their consideration.

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## PLAN, &c.

THE following plan for rendering vaccine inoculation general and effectual throughout the British Empire, as a remedy against the pestilence of the smallpox, embraces three objects.

I. The devising of means whereby to induce all parents and guardians to have their children or wards, before a certain age, inoculated with the cowpox.

II. The devising of means whereby to obtain correct lists of the names of all persons who have not been vaccinated.

III. The devising of means whereby the inoculation may be the most advantageously and easily performed, and at the same time the progress of the affection in patients the most accurately observed amongst all ranks of mankind.

The *first* of these objects might be obtained by an act of the legislature, prohibiting, under severe penalties, the inoculation for the smallpox, and enforcing, under like penalties, the inoculation for the cowpox; as has indeed been done by several of the States on the Continent of Europe. Such measures, however, it is thought, would ill agree with that freedom which is the boast of the British Constitution, and especially as there can be no doubt but that, in this enlightened nation at least, the same end may be attained by more gentle means; such as,

*1st*, By the influence of persons whose opinions are universally respected, and the example of those in the higher ranks of society, whom the great body of the people regard as objects of imitation in the common affairs of life.

*2dly*, By depriving those who neglect or reject the measure proposed of all right to those charities which a generous public has every where instituted for the behoof of persons who, having so conducted themselves in society as to be deserving of support, may happen to require their aid. And,

*3dly*, By adopting certain regulations respecting persons who may be found infected with the smallpox.

The *second* of these objects will be readily obtained with the aid of the clergy. And,

The *third* object of the plan it is proposed to attain by the establishment of a corps of vaccinators, to be distributed in stations throughout the united empire.



## PART I.

After the many convincing proofs of the efficacy of the constitutional affection of the cowpox, in preventing all influence from the contagion of the smallpox, which have been collected from all quarters of the known globe, and especially after so very favourable a report, founded on the most full and candid investigation of the subject, has been promulgated by a British Parliament in favour of vaccination, no enlightened and unprejudiced mind can for one moment hesitate to disseminate the knowledge, and recommend the practice of this invaluable discovery. The Almighty has suffered the knowledge of the constitutional affection of the cowpox, operating as a preventive of the smallpox, to be revealed; and it becomes the bounden duty of those to whom he has granted the knowledge of such a blessing, to explain and to recommend the value and the acceptance of the benefit to others. The advice of the clergy, more especially in a case of this kind, which many are disposed to consider as intimately connected with religion, is at all times regarded with respect, and in this country is generally followed with attention by the great bulk of the people. Much, therefore, may be expected from their countenance and assistance on the present occasion; and from their enlightened minds, and benevolent characters, it cannot be doubted that these aids will be cheerfully afforded in furtherance of the present plan, when the happiness and comfort of their fellow-creatures is the great object in view. The alacrity with which many of the clergy, of all persuasions, have already come forward and exerted their utmost endeavours to disseminate the knowledge and practice of vaccination, deserves the thanks of their country, and shows that their exertions only require to be directed in a proper channel in order to be eminently useful in so good a cause.

From the great advantages which have already been experienced, by those in the higher ranks from vaccination, there cannot be a doubt of this new inoculation being anxiously sought after, and carefully practised amongst them; and consequently that their example will serve to show to others the high estimation in which this discovery is held by those best qualified to appreciate its merits; and from the certain knowledge which they must possess of the advantages resulting to themselves individually, as well as to society in general, from extending the same blessing to persons in the lower ranks of life, we may safely reckon on their cheerful acquiescence in any rational plan, which has for its object the accomplishment of this desirable purpose.

Another means of accomplishing the first part of our plan, is, by depriving those who fail to have their children vaccinated before a certain age, of all right to those charities which a generous public has every where instituted for the behoof of those persons, who, having so conducted themselves in society as to be deserving of support, may happen to require their aid.

In every well regulated state, provision is made for the unfortunate, by the establishment of charities, poors rates, &c. But while the unfortunate may with confidence look up to such support in time of need, it is incumbent on them at all times so to conduct themselves in society as to merit this support. What claim would persons who despised all the laws by which society is governed have upon the benevolence of that society? Could its aid be in justice granted to the idle and disorderly equally as to those who had conducted themselves in strict conformity to its interest and regulations? Certainly not; and if not, why should it be granted to those who, by their obstinacy or neglect, continue to spread murderous diseases amongst their fellow-creatures? The justice of this measure is therefore evident; and pro-



vided the measure itself be properly enforced, it cannot be doubted that it will prove a powerful means of forwarding the plan proposed.

The last of the means proposed for accomplishing the first part of our plan, is, to adopt certain regulations respecting those persons who may be found infected with the small-pox.

There has lately been established by government, “ A  
“ Board of Health to prepare and digest rules and regulations  
“ for the most speedy and effectual mode of guarding against  
“ the introduction and spreading of infection, and for purify-  
“ ing any ship or house, in case any contagious disorder  
“ shall manifest itself in any part of the united kingdom,  
“ notwithstanding the precautions taken to guard against  
“ the introduction thereof; and to communicate the same  
“ to all magistrates, medical persons, and others, his Majes-  
“ ty’s subjects, who may be desirous, and may apply to be  
“ made acquainted with the same.”

A report has accordingly been very ably drawn up by this Board, and published by order of his Majesty’s Privy Council; and as the regulations contained in it are chiefly made with a view to prevent the introduction and spreading of the plague, or other contagious and mortal distempers, there is no reason to doubt that the same measures, if enforced and strictly adhered to, especially when aided by the general practise of vaccination, would soon be effectual in checking and extinguishing the contagion of the smallpox. It is therefore proposed, that, by an act of the legislature, the same rules and regulations should be adopted with respect to persons infected with the smallpox, as has been recommended by the Board of Health with respect to persons infected with other contagious and mortal diseases.

## PART II.

The *second* part of our plan consists in devising means whereby to obtain correct lists of the names of all persons who have not been inoculated with the cowpox.

It is in the execution of this part of our plan that the exertions of the clergy will be particularly called for ; and which is proposed to be effected by adopting the following regulations.

1st, Clergymen of every persuasion, throughout the united empire, shall be enjoined to enter in a book, delivered to them, and kept by them for the purpose, the names of all children baptized by them, with the names of the parents, their profession, and usual place of residence.

2d, On the first week of April, and first week of September every year, two lists shall be made out from these books, of the names of the children, the names of their parents, their profession, and place of residence ; one of which lists shall be forwarded to the head vaccine station of the district, and another to the subordinate station at which the congregations are respectively to apply for the benefits of vaccination\*.

3d, At two periods in the year, viz. on the first Sunday in May, and on the first Sunday in October, let all clergymen be enjoined to read out the names of the children baptized by

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\* N. B. The society of Quakers keep accurate registers of all births and names of their children, which are lodged with the clerks of their monthly meetings, and could be readily forwarded at the periods required.

them, according to the lists forwarded to the head vaccine and subordinate stations, immediately after divine service, and to exhort the parents to have them immediately inoculated with the cowpox, naming a place, a day, and an hour, previously determined on, as the most convenient, by the clergyman of the established church, and the professional gentlemen at the head vaccine station of the district, where inoculation will be performed *gratis* to all such as may apply for that purpose.

4th, The above exhortation to be repeated for the three succeeding Sundays, with notification that those who resist or neglect the measure proposed, shall forfeit all right, for themselves and for their children, to those charitable establishments which are every where instituted for the behoof of those who may chance to require their aid; and also, that, in the event of any of the children being infected with the smallpox, whether by inoculation or otherwise, they shall be immediately confined by proper officers to their own houses, or removed to other houses, and put under regulations similar to those respecting persons infected with the plague.

5th, In the months of July and November, or as soon after as the clergymen shall have received returns, from the professional gentlemen at the head vaccine station of their district, of those who have been inoculated, and of those who have not been inoculated, they shall again read out the list of names as before, declaring those who may have neglected or resisted the measure, to have actually forfeited all right, &c. as in Regulation 4th.

6th, If any clergyman shall baptize the child of parents who do not belong to his own parish or congregation, it will become his duty immediately to give notice of this, the name of the child, the names of the parents, their profession and usual place of residence, to the clergyman of the parish or



congregation to which they may belong, in order that their names may be entered in his register, and forwarded regularly to the head vaccine station, &c. as above mentioned.

*7th*, Should any children be in such a state of health as to render the operation of inoculation improper at the usual period of the general inoculation, the operation may be deferred for a time, at the discretion of the vaccinator, without prejudice to the claim of the parents or child on the charities as above mentioned.

*8th*, A book to be kept by each clergyman, according to a formula prescribed, in which he shall insert the names of the children, if any such there may be, who have not been inoculated, with the reason, if known, why they have not been vaccinated. If this has proceeded from a bad state of health, such name must be again inserted in the list preparing for next return to the head vaccine station of the district.

*9th*, Should any children die before the period of the general inoculation, it shall be the duty of the parents to make this circumstance known to the clergyman of the congregation to which they belong; the clergyman shall request of parents to do this at the times of reading out the names, and exhorting them as above mentioned in Regulation 3d. And they shall mark "Died on ——" opposite the name in the register kept by them, and forward a note of the same to the subordinate vaccine station, to be there also inserted opposite the name in the registers, and in the lists returned to the head stations, as a cause of non-vaccination.

*10th*, That it shall be made a clause in all charters of establishments for charitable or beneficent purposes, and under penalty of forfeiting such charter, on proof being led of the fact, that none shall be admitted to the benefits of such establishments, unless they have undergone inoculation with

the cowpox ; and that petitioners requesting aid must in every case send a certificate along with their petition, either of their having complied, or being willing to comply with the regulations respecting vaccination.

11th, In order to carry the above regulations into effect, it shall be stated in every parish-certificate granted to persons about to change their place of residence, whether or not they have complied with the regulations respecting vaccination.

### PART III.

The *third* part of our plan consists, in devising the means whereby the inoculation for the cowpox may be performed, and the progress of the infection examined in the most easy and advantageous manner, amongst all ranks of persons ; and this is proposed to be effected in the following manner.

1st, There shall be established Three National Vaccine Boards, viz. one in London, one in Edinburgh, and one in Dublin. These boards shall consist of five members each, to be appointed by Government from among the resident and practising surgeons of the said cities, and are to regulate the business of vaccination throughout England, Scotland, and Ireland respectively. More particularly, they shall each appoint vaccinators properly qualified at the different stations throughout the three kingdoms or nations respectively. They shall each make an official report on the subject to Government at the end of every year, stating the numbers vaccinated, the numbers that may have died before vaccination, and the numbers, if such there may be, that have not been inoculated ; and, generally, whatever circumstances may appear to them to be of consequence for the improvement and general adoption of vaccination.

To each board there shall be attached a secretary and an inspector; both to be appointed by, and to be under the controul of, the separate boards respectively. It shall be the duty of the former generally to manage the correspondence of the respective boards, &c. And of the latter, to visit as many of the head and subordinate stations every year, under the direction of their respective boards, as circumstances shall permit, to examine personally into the state of vaccination, and to make frequent reports on the subject to their respective national vaccine boards; and, particularly, to notice whatever circumstances may, in their opinion, tend to the improvement and general adoption of vaccination.

These inspectors to be put on a similar footing with inspectors of military and naval hospitals in Great Britain.

Each of these national vaccine boards shall carry on the business of vaccination in the said cities of London, Edinburgh, and Dublin respectively, in the same manner as at the principal or head vaccine stations after mentioned.

2d, There shall be established                      principal or head stations for vaccination in Scotland, and a proportional number in England and Ireland, or one at least in each county, riding, or rape.

These head stations for vaccination shall be established in the most populous cities or towns of the county or district, and a convenient room appointed where inoculation may be performed GRATIS two days in the week upon all who may apply.

3d, Each establishment at the head stations shall consist of three or more inoculators, according to the population of the city or town in which it is situated, to be appointed



from amongst the resident and practising surgeons of the place by the respective national vaccine board.

It shall be the duty of the members of these establishments to receive, and to correspond with the clergymen respecting the lists of christenings, &c. to perform inoculation, to inspect those who have been inoculated, and to preserve and transmit contagious matter to such of the subordinate stations as may require it.

*4th*, There shall be established a certain number of subordinate stations, according to the population of the county or district, under the controul and jurisdiction of each of the head stations.

*5th*, The establishment at the subordinate stations shall consist of one inoculator, to be recommended by the inoculators at the head stations, from amongst the resident and practising surgeons in the district, and appointed by the respective national vaccine boards.

*6th*, The inoculators at the subordinate stations shall perform inoculation GRATIS at any time throughout the year, when the patient is brought to them for that purpose; but they must attend at their respective stations one or two hours on two days in the week, during the months appointed for the general vaccination, to inoculate, and to inspect those who have been inoculated.

*7th*, The vaccinators at the subordinate stations shall make out and forward to the head stations of their respective districts, at the close of each period of general inoculation, a list (according to a form given, so as to keep the lists of the children of each congregation separate) of the names of all the children inoculated by them, with the names of their parents, their profession, and place of residence. Also

a list of the names of those children, their parents names, &c. who have not been inoculated, stating whether this has proceeded from the death of the children before the period of inoculation, from the children labouring under any disease which might render the inoculation improper or doubtful, or from neglect in the parents or guardians to bring forward the children for inoculation.

They shall be also required to forward any remarks on the progress of the affection in particular cases, or on the subject in general, which may be deemed of importance to the practice and general adoption of vaccination.

8th, The establishment at the head vaccine stations shall, as soon as they receive the lists from the subordinate stations (vid. Reg. 7.) complete from them the entry made in their books of the lists they received from the clergymen; and from this book they shall make out and return to each clergyman a list of the names of the children, &c. &c. corresponding to that received from him, specifying those who have been inoculated, and those who have not been inoculated, with the cause of non-inoculation. (vid. Reg. 7.) And they shall at the same time also forward to the national vaccine board, copies of the lists returned to the clergymen, the remarks (vid. Reg. 7.) received by them from the subordinate stations of their districts, with such other observations as they may deem of importance to the interests of vaccination.

9th, If any inoculator shall vaccinate a person not belonging to the district of his station, he shall give to the parents, the guardian or the patient, a certificate of his having done so, according to a form prescribed, and shall enter such name in a separate list, to be forwarded to the head vaccine station along with his own proper list.

10th, In order to guard against the importation of the contagion of smallpox into the united empire, it may be necessary that general inoculations should be more frequent in the maritime cities and districts than above specified. And in order speedily to check and subdue the contagion of smallpox, should that disease appear in any of the inland districts, besides putting in force the regulations recommended by the Board of Health, respecting those persons who may be infected, the members of the head vaccine station shall, on ascertaining the fact, order a general inoculation to take place throughout the whole district, or any such part thereof as may appear to them to be necessary, for the purpose above mentioned.

11th, The business of vaccination throughout the united empire shall be confined solely to the members of the vaccine boards and secretaries, and to the vaccinators duly appointed by them, under a severe penalty, or fine, recoverable at common law, and to be given to informers.

*N. B.* The family physician or surgeon to be permitted to attend during vaccination, but the operation to be performed, and the responsibility to rest solely with the vaccinator employed.

12th, When any inoculator is requested by parents or by guardians to vaccinate children at their own houses, then a remuneration will be required for conducting the operation, such as is given at present to family-surgeons under similar circumstances.

The advantages which would result from confining the practice of vaccination to such persons only, even among those of the medical profession, as are duly qualified to undertake it, are of much importance to society and to the cause of vaccination. It has already been stated, that, from the process



of vaccination having been too often conducted by persons totally ignorant of the laws by which the action of the contagion of the cowpox on the human constitution is regulated, unfortunate mistakes have taken place; pretences have thus been obtained by interested and designing men, for fabricating idle and malicious reports tending to create prejudice in the public mind, at all times prone to resist innovations however salutary, and much detriment has happened to the fame of the discovery itself. By this restriction it is believed that the source of these evils would be effectually abolished; and it would also relieve many surgeons from a species of practice, which to my certain knowledge they regard as troublesome, and too trifling to study, or attend to as they ought, or as its importance to society demands.

By this restriction it is also intended to remunerate the inoculators for their trouble in attending at their several stations at stated periods to dispense the blessings of vaccination, free of all expence, to those who apply for that purpose; for the practice of inoculation being thus confined to the corps of vaccinators, the members of this corps must of course be employed to inoculate all the patients in the higher ranks of life, and will receive from them a remuneration for their attendance; (vide Regul. 11.) and this remuneration will, it is imagined, be full compensation for the trouble to which by the adoption of this plan it is proposed to subject them, without any additional burthen being imposed upon individuals, or upon the public; and it may be remarked, that, as the employment of any inoculator, even in his own district, by persons in the higher ranks of life, and from whom only he can expect to receive any remuneration for his trouble, will in a great measure depend on the degree of celebrity he may have acquired in this important branch of medical practice, that due degree of emulation amongst the members of the vaccine corps, will be established. which, amongst the members

of every profession, is at all times desirable, as a circumstance highly advantageous to the public.

With regard to the expence which must necessarily be incurred by carrying the above plan into effect, it is too trifling to deserve notice, considering the magnitude of the object to be accomplished. The pay of the inspectors, the charge for books, and other articles of stationary, together with a small allowance for the use of rooms, in certain situations where it may be necessary to hire them for the purposes of vaccination, but which, it is thought, would seldom be necessary, as accommodation might generally be had in churches, session and school-houses, dispensaries, &c. will constitute the whole of the permanent expence that appears to be required. This expence must be paid by government for one or two years, until the plan has become effectual; but it might afterwards be defrayed by a general contribution, once in four or five years, in the established churches, and other places of divine worship, throughout the united empire.

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Since the above plan was forwarded to his Majesty's ministers, Mr Fuller, M. P. to whom I also sent a copy, has obligingly favoured me with a copy of the following bill, "To prevent the spreading of the infection of the "smallpox," which has, by him, been brought into parliament.

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*"A Bill (as amended by the Committee) to prevent the spreading of the infection of the Smallpox.*

"WHEREAS the inoculation of persons for the disorder called the smallpox, according to the old Suttonian method,

cannot be practised without the utmost danger of communicating and diffusing the infection, and thereby endangering, in a great degree, the lives of his Majesty's subjects, May it therefore please your Majesty, That it may be enacted; and be it enacted by the king's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons in this present parliament assembled, and by the authority of the same, that from and after the first day of August next, no medical practitioner or other persons shall inoculate patients for the smallpox, within the distance of three statute miles, within the distance of the utmost boundary of houses adjoining to each other, of any city, town, hamlet or village of the united kingdom, in which there are ten houses adjoining to each other, under the penalty of forfeiting fifty pounds for every such offence, to be recovered before two magistrates upon the oath of one or more credible witness or witnesses, to be levied, in case of conviction, upon the goods and chattels of the offender; and half of such penalty shall go and be paid to the informer, and half towards the establishment of a fund for the relief of any poor person or persons who may happen to be taken ill of the infectious smallpox, in the parish in which such offence shall have been committed; and which fund shall be at the disposal of the clergyman and churchwardens or overseers of the poor of the said parish for the purposes aforesaid.

“And be it further enacted, That all medical practitioners or others inoculating for the smallpox or Suttonian method of inoculation, and where infection can be communicated therefrom, without the limits or distance prescribed by this act, shall cause the words “smallpox hospital,” “or pest-house,” written or printed in large and legible characters, to be affixed upon some conspicuous part of the house or houses so employed in or occupied for that



purpose, under the penalty of fifty pounds, to be levied and applied in like manner as herein before directed, for his, her, or their neglect in doing the same.

“And be it further enacted, That in case any person or persons shall be taken ill of the infectious smallpox in any city, town, hamlet, or village in which there shall be ten houses adjoining to each other, that then and in such case the person or persons so taken ill shall be removed by their family or relations, as soon as he, she or they shall be deemed fit, by a medical person, so to be removed, at their own expence, or in case they are deemed incapable of bearing the same, by two magistrates of the district, then at the immediate expence of the parish in which they are so taken ill; and which expence, together with all other reasonable charges, at the discretion of two magistrates of the district, shall afterwards be reimbursed by the parish or parishes to which such persons shall respectively belong, to some convenient and proper distance, such distance to be settled and appointed by a magistrate or magistrates of the district in which such case shall occur, and there be taken proper medical care of, on pain of forfeiting, by the occupier of the house in which such person shall be taken ill, the sum of five pounds for every such offence, such penalty or penalties to be levied and applied in the same manner as herein before directed by this act; and the master, mistress, or principal occupier of any house or houses where such infected person or persons shall be taken ill, or to which he, she or they shall be removed by virtue of this act, and all persons whatever in the united kingdom, having at any time the infectious smallpox in his, her or their house or houses, shall cause the words “smallpox here,” written or printed in large and legible characters, to be fixed on some conspicuous part of his, her or their house, or houses, for so long as the infected person or persons shall actually continue within the same in an infectious state as a smallpox patient

or patients, under the penalty of twenty pounds for neglect in doing the same, for any such offence, to be levied and applied in the same manner as herein before directed by this act.

“ And be it further enacted, That every master or mistress or principal occupier of any house or houses situated within any city, town, hamlet or village in which there are ten houses adjoining to each other, shall within twenty-four hours after the same shall have come to his, her or their knowledge, inform the churchwarden or churchwardens, or overseer or overseers of the poor of the parish in which such house or houses shall be situated, of such infectious small-pox being in his, her or their house or houses, under the penalty of ten pounds for neglect in doing the same, for every such offence, and which penalty or penalties shall be levied and applied as hereinbefore directed by this act.

“ Provided always, and be it further enacted, that no penalty or penalties contained in this act shall be levied within the space of two calender months from the time of the party or parties being convicted of the offence for which such penalty shall be incurred; and if it shall appear to two or more magistrates that the infectious smallpox shall not have spread in consequence of any such offence, or neglect of any of the provisions or regulations contained in this act, but on the contrary that the communication of such infection shall have been effectually prevented by proper and sufficient means, then and in such case it shall be lawful for such justice of the peace or magistrates, and they are hereby directed to remit the whole of any such penalty or penalties, any thing in this act contained to the contrary notwithstanding.”

The purpose of the above bill is to prevent the spreading of the infection of the smallpox; and for this purpose it is

judged proper to enact, that no person shall perform inoculation for the smallpox unless under such regulations as, it is thought, must, with the great body of the people, amount to a total prohibition; and to put persons infected with the disease under such strict regulations as, if fully enforced, would no doubt greatly forward the object of the bill, and might in a short time, perhaps, even extinguish the contagion of the smallpox in these realms. But before carrying these measures into effect, it should be maturely considered, whether or not, under the present existing circumstances with regard to vaccination, the extinction of the smallpox, by the means proposed in the bill, would be advisable. I am clearly of opinion that it would not.

If indeed the efficacy of the vaccine inoculation as a sure preventive of the smallpox was firmly established, and measures adopted for rendering it general and effectual amongst all ranks of persons, no doubt could be entertained of the propriety of the measures proposed in the bill. But while the smallest doubt remains concerning the efficacy of vaccination to produce the desired effect, such measures must ultimately be attended with the worst consequences. For the smallpox being thus much kept under, or even subdued for a time, while no active measures are adopted to render vaccination general, that apathy amongst the lower orders of mankind, so well described by the College of Physicians of London, as the most powerful cause of obstructing the general adoption of vaccination, would greatly increase, and vast numbers of persons would consequently remain liable to be infected with the smallpox; many of whom, either by going into other countries in which the small-pox may still be frequent, or by that disease being again imported into this country, notwithstanding of every measure that may be used to prevent it, or even by its appearance amongst us again *de novo*, for who knows whence the variolous contagion proceeds, will thus be made to suffer severely for this temporary immunity.



The extinction of the smallpox in these realms must, therefore, I apprehend, be accomplished by other measures than those proposed in the above bill ; it must be effected by degrees, and vaccination must itself be the chief destroyer of this ancient and formidable enemy of mankind ; the contest must be fairly decided between themselves, but it should be remembered, that, in order to put them upon an equal footing, vaccination in its most perfect state must, by inoculation, (for this disease is not infectious like its opponent the smallpox) be rendered as general as smallpox has been for centuries past, that is nearly universal ; if, then, vaccination should be found incapable of maintaining its ground against the attacks of the ancient foe, it must of course fall, but if it should happily prove victorious, as there is in my opinion not the smallest room to doubt it will, then the only care necessary will be the adoption of such regulations as may serve to render the practice perpetual as well as general and effectual.

The admitting, therefore, of inoculation for the smallpox, under much mitigated regulations compared with those proposed in Mr Fuller's bill, such as merely confining patients to their own houses, and using means to cut off all communication between the patient, his attendants, and other persons liable to be infected, so as to prevent what is called the natural smallpox, and, at the same time, using every endeavour, by means of some regular plan, short of actual compulsion, to render vaccine inoculation general and effectual, holds out the fairest prospect for diminishing, and in a short time for entirely preventing the spreading of the infection of the smallpox, and the consequent great mortality from that disease. To obtain this result by some regular plan, is certainly, both in a moral and in a political point of view an object highly worthy of the attention of the government of every well regulated state ; and it appears to me that the plan,

the outlines of which are detailed above, or some similar one, would be well calculated for this purpose.

It has been recommended by writers on vaccination, and by others zealous in the good cause, that persons not of the medical profession should yet undertake to conduct this new inoculation; and at a very early period of the Jennerian inoculation in this country, a recommendation to this effect was drawn up by Dr Farquharson and myself; and, sanctioned by the managers of the vaccine institution, established at the Edinburgh Public Dispensary, for the gratuitous inoculation of cowpox, it was forwarded to the clergy of Scotland, requesting them not only to recommend the adoption of vaccination as a preventive of smallpox, but actually to engage personally to conduct the operation; and in order to enable them to comply with our request, it was accompanied with a short account of the history of vaccination, with directions for taking and preserving the infection, for performing inoculation, and for judging concerning the sufficiency of the disease produced. We have, however, long since been convinced, that although much benefit may be derived to vaccination from the exertions of the clergy, yet that it is not by their undertaking to conduct the inoculation that this is to be effected; we are more and more convinced that this part of the business, together with the responsibility attending it, should be left entirely to medical men; and I would add to such medical men as have made vaccination a particular study. Mr George Bell, surgeon in Edinburgh, has lately published a second edition of his Treatise on the Cowpox, addressed to the clergy of Scotland, in which he expresses his opinion, "That the support of the clergy collectively is necessary to complete the ultimate success of the cowpox inoculation\*," not by recommendation alone

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\* Vid. Treatise on the Cowpox by George Bell, 2d edit. preface, p. 10. 1807

but by actually engaging themselves in performing inoculation. Here, then, Mr Bell's opinion and mine differ considerably; he thinks that, for the good of society and the cause of vaccination, the clergy should not only recommend, but practise inoculation for the cowpox; and I am clearly of opinion that example and precept are the points to which alone the exertions of the clergy ought to be confined. By adopting the practice in their own families, and by frequently and seriously inculcating the adoption of it amongst the members of their congregations, clergymen will confer a much greater benefit on society, and do more towards rendering vaccination general, than by undertaking personally to conduct the operation.

No person knows better than Mr Bell the great nicety there is, in many cases, in judging of the extent of the vaccine process on the constitution, and consequently in forming our opinion of the security of our patient; and, under these circumstances, I do think that Mr Bell is wrong to represent the business of vaccination in so slight a point of view as he does, when he calls upon the clergy to officiate personally as inoculators. Mr Bell says, "There are still among the common people, chiefly in the country parishes of Scotland as well as England, many religious scruples and other prejudices which ought to be removed. This the clergy are well qualified to do; and I have no doubt but that, by their judicious perseverance, they would soon induce the people to receive generally the new inoculation;" and thus far I perfectly agree with Mr Bell: he however adds, "But I should wish them to go much farther than mere recommendation and argument; in my opinion, every clergyman might easily *learn the few essential facts relative to the practice of vaccination*; and, when discharging his clerical functions in visiting his parishioners, might inoculate all those who apply to him, or who live at such a distance from a town or village that the assistance of a medical



“ practitioner cannot readily be procured. If the clergy of  
“ this country were *to engage generally and heartily in the mea-*  
“ *sure*, they would find numberless opportunities of gaining  
“ the affections of their people, and they would do more to-  
“ wards extirpating the smallpox than the whole medical  
“ profession, aided by the legislature, can accomplish. In-  
“ deed, *if they visited their parishes twice in the year, and in-*  
“ *oculated all the young children in the course of their pro-*  
“ *gress, which might be easily done, by devoting to it a few mi-*  
“ *utes every day*, the smallpox never could become epide-  
“ mic in these districts, and would soon be absolutely un-  
“ known.” Vide Treatise on the Cowpox, page 97, second  
edition, 1807.

From this passage one would be led to suppose that the operation of inoculation was so easy,—the extent of the disease produced so readily ascertained by certain well known symptoms,—and the whole business of vaccination so simple, that it might be undertaken by any person, and, indeed, that little or nothing more was necessary than merely to perform the operation of inoculation. If so, how comes it that we have so many cases of mistakes, disappointments, and of supposed failure? Does Mr Bell think, that the cases in which vaccination has been supposed to fail in giving the desired security against the smallpox, have been cases of real failure, *i. e.* cases in which the process of vaccination had been as perfect as possible, rather than cases in which practitioners had been deceived, either from their ignorance, or from their inattention to the symptoms during the progress of the disease? I am certain Mr Bell does not think so, and consequently must be aware that the business of vaccination is not so simple as he has represented it in the above passage.

Again, “from the intercourse and correspondence” which Mr Bell has “had with many of the clergy in various parts

“ of Scotland,” page 97, he must well know that a very great number of that worthy and respectable body of men are far advanced in years, and beyond that period of life when men are inclined to volunteer to “engage heartily” in the study and practice of any new profession, especially of one in which they would experience considerable labour, many difficulties, and a very great degree of responsibility. Besides, it is well known, that a very great number of the country parishes in Scotland extend to the distance of three and four miles, and upwards, from the residence of the clergyman; now allowing that a clergyman has “learned the few essential facts relative to the practice of vaccination,” and that he “visits his parish twice in the year, and performs vaccination to all who apply to him, at such a distance, that the assistance of a medical practitioner cannot easily be procured:” How is his knowledge of these essential facts to be applied so as to enable him to judge of the efficacy of the inoculation? It is not to be thought that the clergyman, “by devoting a few minutes every day to vaccination,” can travel the distance of several miles, so often as may be necessary, to inspect and judge of the progress of the disease; and the same apathy, &c. amongst the parents, which prevents them carrying their children to a surgeon for inoculation, will prevent them carrying their children to the clergyman for inspection at his own house so often as may be necessary for this purpose. But, indeed, this attendance for inspection does not seem to enter into Mr Bell’s plan; yet, concerning the degree of attention that is necessary to mark the progress of the symptoms in the course of the disease, in order to be enabled to form a judgment of its extent, and of the security of our patient, and concerning the bad consequences attending the neglect of frequent and regular inspection, Mr Bell, in another part of his treatise, informs us, “I have already had occasion to state, that there is no one certain test of a patient having passed

“ through the genuine cowpox ; and, that it is only by the  
“ most minute attention to every circumstance of the dis-  
“ ease, in all its stages, and to the combination and relation  
“ which all the appearances bear to each other, that a de-  
“ cisive opinion can be formed,” page 66. And, again,  
“ The cowpox is comparatively so much milder than the  
“ smallpox, that many practitioners think they have done  
“ enough, if they inoculate their patient and visit him once or  
“ twice during the progress of the disease. But so much de-  
“ licacy of observation is requisite to ascertain the regular  
“ progress of the genuine cowpox, that every patient should,  
“ if possible, be seen at least once in two days, otherwise  
“ mistakes will occur ; the practice will fall into disgrace ;  
“ and many be thereby deprived of the advantages that would  
“ result from it,” see page 65. of Mr Bell’s Treatise.

Concerning the nicety required in performing the inoculation also, and the uncertainty of being able thereby to produce the disease, Mr Bell says, “ a failure is known to take place  
“ in a considerable proportion of inoculations, so that many  
“ require to be inoculated three, four, or five times before  
“ the disease can be produced,” see page 69.

If this be a correct statement of the “ few essential facts  
“ relative to the practice of vaccination,” it must be evident that by clergymen engaging in this practice according to Mr Bell’s plan, they must occasion more detriment to vaccination, and to all concerned, than any good which can result from their exertions, if directed in this channel ; and although I do not agree in the whole of the above doctrine respecting the business of vaccination, yet I agree so far as to think that a very considerable degree of attention is necessary to inspect frequently and minutely the appearances and symptoms during the progress of the disease, certainly much more than could be given by clergymen dedicating a few minutes every day to this purpose ; and it is chiefly from a



knowledge of this circumstance, that the measure proposed by Mr Bell meets with my disapprobation ; because if this necessary attendance for inspection is to depend entirely on the parents voluntarily bringing their children several miles so regularly, and so often as may be necessary for the satisfaction of the clergymen, the case appears to me to be hopeless ; and if it is to depend on the clergymen visiting the patients at several miles distance, the thing is, generally speaking, impossible.

## No. VI.

*See page 102*

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DR ADAMS, author of a treatise on Morbid Poisons, and successor to the late Dr Woodville, as physician to the smallpox and inoculation hospital in London, has, as might have been expected, turned his attention to the investigation of the nature of the vaccine infection, and the laws by which its action on the human constitution is regulated. In 1807, Dr Adams published "A popular view of vaccine inoculation, shewing the analogy between the smallpox and cowpox;" in which he gives what he deems to be "presumptive proofs deduced from the laws of all other morbid poisons, that the variolous and the vaccine are the same," page 37.

Dr Adams, in illustration of this opinion, gives a description of a particularly mild kind of smallpox, which he says is well known to nurses, under the name of the white sort; and which he, from the figure and colour of the pustules, has called the *pearl sort*; of which he says, "the nearer the resemblance is preserved to a pearl, and the smaller the individual pustules, the more perfect is the character," page 25. And he adds, "by continuing, with great cau-

“tion, to inoculate at the hospital from pearl small-  
“pox, and afterwards by selecting those arms which had  
“most the appearance of cowpox, we at last succeeded  
“in procuring a succession of arms so nearly resembling  
“the vaccine, that an universal opinion prevailed among  
“the parents, that they were deceived by the substitution  
“of the one for other,” see page 27. Dr Adams gives the  
following cases extracted from his register as instances of  
the above position.

August 14th 1805, William Croft was inoculated, with  
several others, from a subject who had casual smallpox.  
Croft had diarrhoea three days after he was inoculated; a  
circumstance in children often favourable for the future dis-  
ease.

On the third day the insertion appeared elevated.—6th,  
A vesicle.—8th, The vesicle spread.—10th, Has a vaccine  
appearance, with fever.—13th, One hundred and fifty pus-  
tules appeared, which passed regularly through their stages,  
somewhat shortened, as often happens in inoculation.

Rogers was inoculated from Croft on the 26th of August,  
and his arm “was perfectly vaccine in all its stages.”

From Rogers, Mary Dobins was inoculated on the seventh  
day; and “the arm proved vaccine in all the stages.” No  
secondary eruption is mentioned to have taken place on  
either Rogers or Dobins.

Richard Jude was inoculated from Rogers, on the same  
day as Dobins; and “his arm was vaccine in every stage.”  
“On the thirteenth day, as the arm was drying, appeared  
“one hundred and fifty variolous pustules,” see page 28  
and 29.



Several other persons were inoculated from this stock of virus, and it appears that in all of them, the effect was similar to that in the cases above mentioned.

Dr Adams again renewed his observations on this interesting point in April 1807. "Mary London, a girl about sixteen years of age, was sent to the hospital for inoculation, she was inoculated for smallpox, but the effect of inoculation seemed to be superseded by the casual disease received before she came into the house." The case appears to have been a very favourable one, "though every part exposed was as full as a distinct smallpox could well be," page 154.

"Of sixty-four persons inoculated from Mary London, whose cases can be ascertained from the register, and by subsequent inquiries, it appears that the whole had circumscribed vesicles resembling cowpox;—two others were marked clustered. Of these sixty-four, eight passed through the disease without any secondary pustules; twenty-six had no pustules till after the twelfth day, which is about the period of scabbing, and the remaining twenty-six had pustules between the tenth and seventeenth days," page 155.

The arm of Charles Horwood, one of the above mentioned number, retaining its vaccince character till the eleventh day, was so particularly favourable, that it was selected, we are informed, for inoculation. "This proved to be one of the subjects in whom no secondary pustules appeared. As far as our register, and subsequent inquiries inform us, all who were inoculated from this source passed through the disease without any secondary pustules; though in some, the fever was considerable. From one of them, Caroline Gear, on the tenth day after inoculation, when the arm still retained the regular circumscription of the vaccine

“ vesicle, three subjects were inoculated, in all of whom  
“ the disease retained its character. From these cases, ino-  
“ culations have been continued for a succession of eight  
“ series, each consisting of several subjects ; and in all the  
“ same character has been preserved,” page 156. One of  
these subjects, Stevens, had a circumscribed vesicle on the  
the arm, and an eruption of pustules over the body, which,  
on the nineteenth day, were in number 400. “ From  
“ Stevens, fluid was taken from the arm and the pustules, to  
“ inoculate others. The fluid from the arm produced the  
“ vaccine vesicle, though in a few instances attended with  
“ secondary vesicles. The fluid from the pustules produced  
“ true smallpox pustular cases for three successions,” page  
157.

From attentively considering the circumstances detailed in these cases, I am led to draw the following conclusions : 1<sup>st</sup>, That the disease affecting Mary London, and also the person from whom Croft was inoculated, was readily communicated to the human subject either by effluvia or by inoculation ; but, that the action excited by the virus of this disease was different when communicated by effluvia from what it was when communicated by inoculation. 2<sup>d</sup>, That the eruption of pustules over the body, which followed inoculation, with the virus of this disease, was not in consequence of the inoculation, but was in consequence of the exposure of the patient to a highly variolated state of the atmosphere in the hospital at the time of inoculation ; and, 3<sup>dly</sup>, That the virus with which these inoculations was performed, was different from common variolous virus ; and consequently, that this virus must either have undergone some change, or that the disease, which produced this virus, was materially different from the common smallpox.

Again, it appears that the practice said to be followed by Dr Adams, "of continuing with great caution to inoculate " at the hospital from pearl smallpox, and afterwards to " select those arms which had most the appearance of cow- " pox," was not necessary for the conversion of the disease, in the cases stated above. For neither the case of Mary London, nor of the person from whom Croft was inoculated, appear to have been remarked at the time when virus was taken from them for inoculation, as cases of the pearl sort of smallpox, or to have been selected with the view of propagating from them a mild disease resembling the vaccine; on the contrary, by the selection of Mary London, it was intended to propagate a disease with pustular eruptions over the body, in order to do away an opinion entertained by patients applying for inoculation, that they were deceived by the substitution of the cowpox for the smallpox;\* yet the arms of the very first persons inoculated from the pustules on these patients had "a vaccine appearance," and the affection produced in others inoculated from these arms, was "vaccine in all its stages."

It must be confessed that the difference in the mode of action manifested by this contagion, when propagated by effluvia, and when communicated by inoculation, is a very singular occurrence, and, if there be no mistake in the detail of the particulars of these cases, renders a farther investigation of the nature of this morbid poison a subject of great interest.

Should Dr Adams be so fortunate as again to meet with similar occurrences in his practice at the smallpox hospital, it would strengthen his opinion of the identity of at least this very particular variety of smallpox with the vaccine dis-

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\* See Adams on Vaccine Inoculation, page 35, and Appendix, page 154.



ease, if he found that he could communicate it to the cow, and from her again to the human subject, under the legitimate form of cowpox ; and especially if he found that about the fifth day of vaccine inoculation, when the vesicle was advancing regularly, two other inoculations performed on the same person, namely, one with this new virus, and one with virus from the advancing vesicle, ran an exactly similar course, that is, were both accelerated in their progress to maturity by the constitutional affection, produced by the first vaccine inoculation, having each an areola, which formed and also faded away, and that both vesicles also dried up at the same time with the primary inoculation. Until, however, these or other equally satisfactory experiments be made, we must suspend our opinion concerning the identity of this disease produced by inoculation, as reported by Dr Adams, with the legitimate vaccine disease of Dr Jenner. And I freely confess that I am more inclined to hesitate in forming any opinion from the circumstances detailed in the above cases, from observing, what I consider to be several important inaccuracies in Dr Adam's statement of the laws and mode of action on the human subject, of some morbid poisons, from which he deduces "his presumptive proofs, "that the variolous and the vaccine" (poison) "is the "same."

After premising the general proposition, that no two local or constitutional diseases will continue at the same time in the same place, or in the same constitution, and to which I freely subscribe ; Dr Adams states that, "if a person be inoculated to-day with chickenpox, and to-morrow with "smallpox, the inoculation from the latter will remain un-  
"altered till the chickenpox has completed its progress ;  
"after which the smallpox will begin, and require as many  
"days to complete its course, as if the insertion of variolous  
"matter had only been made on the day on which the  
"chickenpox began to dry." See page 38.

Now this statement I hold to be incorrect ; and it is of much importance to attend to this error, because it is by contrasting the statement now made with a statement of the effects said to be produced by inoculating the same person at the same time with the virus of cowpox and of smallpox, that Dr Adams deduces the proofs of their identity.

The above statement I hold to be incorrect in this, that if a person be inoculated to-day with chickenpox, and to-morrow with smallpox, the inoculation from the latter will *not* remain unaltered, as Dr Adams states it will, till the chickenpox has compleated its progress ; but both punctures will advance regularly, as if one only had been performed, during the period necessary for the local stage of these infections, and until the constitutional stage from one of them is excited ; at which time, and not before, the progress of the other morbid poison, provided its local course be finished, will be arrested, until the first constitutional affection has disappeared. If the first constitutional affection be finished in a few days, the second constitutional affection will follow in close succession ; and thus in the instance above stated by Dr Adams, the smallpox will *not* require as many days to complete its course after the chickenpox begins to dry, (if by this the Doctor marks the end of the constitutional affection from chickenpox,) as if the insertion of variolus matter had only been made at that time.

As it is necessary to be distinctly understood in this statement, it may be further illustrated by supposing that the affection produced by inoculation with the virus of chickenpox on the human body, consists of two stages, viz. the local and the constitutional stages ; and that the former runs a course of seven days, and the latter a course of five days. Also by supposing that the affection produced by inoculation with the virus of smallpox runs a similar and equal course. Then, according to the statement which I have made, as both inoculations run their local course at the

same time, the constitutional disease excited by the smallpox, or by the second inoculation, will be finished on the seventeenth day from the insertion of the virus: According to the statement made by Dr Adams, it will not be finished until the twenty-fourth day from inoculation.

Again, we are told by Dr Adams, that "the same interruption is produced if cowpox is inserted instead of smallpox, during the time that the constitution is under the influence of measles, or chickenpox," page 39.

If a person be under the influence of the measles, or the chickenpox, as a constitutional disease, and be then inoculated with the cowpox or the smallpox, an interruption in the progress of such inoculation may certainly take place, but this ought not to have been stated by the Doctor to be "the same interruption" as that above mentioned; for, in this instance, the circumstances are materially changed; in the first statement, the second inoculation was made while the action of the first morbid poison was merely local; in this statement, the second inoculation is supposed to be made when the action of the first morbid poison is general on the constitution; the cases therefore are not similar, and therefore to say "the same interruption," is inaccurate.

Although, however, I differ from Dr Adams, in the above statements, yet I agree with him in concluding "that the action of measles, and also of chickenpox, is different from the action of smallpox or cowpox, and that they cannot be maintained at the same time in the same constitution."

With the above statements concerning the progress of the inoculations made with chickenpox and with smallpox, or with chickenpox and with cowpox, about the same time, Dr Adams next contrasts the progress of inoculations made



with smallpox and with cowpox, under similar circumstances ; he says, " But if smallpox and cowpox are inserted " at the same time, in different parts of the same person, " we find no interruption whatever in the progress of either. " Both begin and go through their usual courses with the " same regularity as if only one of them had been inserted " in two different places," page 40.

This statement I also consider to be in part incorrect. For although I agree, that when a person is inoculated at the same time with smallpox and with cowpox in two different parts, no interruption whatever in the progress of either takes place ; yet I must state, that this uninterrupted progress continues only during a limited time, (*viz.* during the local stage of these morbid poisons,) for as soon as a constitutional affection is produced, by the smallpox for example, if the local course of the other inoculation be finished, the farther progress of the vaccine affection is arrested until the variolous action has exhausted itself on the constitution ; or it is altogether superseded according to circumstances. See Appendix, page 6.

Innumerable instances have occurred to convince me of the truth of this position, when inoculation for the cowpox has been performed during the period between a person receiving the casual infection of smallpox and the eruptive fever which was thereby induced : and as we must suppose the same action to be excited on the human constitution by the variolous poison, whether it has been casually or intentionally communicated, I must infer that this poison will observe the same laws with regard to the vaccine poison in either case.

The following is one among many other cases which I have minutely examined, in which the progress of the vac-

cine inoculation was not accelerated by the constitutional action of smallpox (as should have been the case had the vaccine and the variolous poison excited the same action on the human constitution,) but was completely arrested at the period when the constitutional vaccine affection should have taken place.

— Clark, æt. three months, was inoculated at the Public Dispensary on Wednesday the 14th October 1807,—was brought back for examination on Saturday the 17th, at which time the inoculation had evidently taken effect. On Sunday the 18th, the child was observed to be feverish, and on Tuesday an eruption of pimples was observed on the face. On Wednesday, the fever still continued, and the eruption had increased so that the mother thought it improper to carry her to the Dispensary. I saw the child early on Thursday the 22d October, at which time there was still a great degree of fever present; the eruption was very numerous over all the body, and was evidently that of smallpox. The vaccine vesicle on the arm was of full size for the 8th day, and was perfectly characteristic, but there was not, nor had there been, the smallest appearance of an areola around it, so that although the eruptive fever had been present for three days, and the eruption of smallpox had actually taken place, neither of these circumstances had any effect in hurrying on the progress of the cowpox affection by causing the formation of an areola around it.

23d, Has still some fever,—the variolous pustules increasing,—the cowpox vesicle stationary.

24th, Fever nearly gone,—pustules advancing to suppuration,—vaccine vesicle stationary,—still no appearance of areola nor hardness around it.

25th, Is very fretful, and more feverish to-day,—the vaccine vesicle appears to be drying up, no hardness nor in-

flammation has ever appeared around it, but otherwise, it has been quite characteristic.

26th, Is still very fretful,—the vaccine vesicle seems quite dried up.

28th, The vaccine vesicle is completely formed into a crust,—there never has been any hardness nor inflammation around it, nor has it increased in size since the 8th day from inoculation.

In this case, the constitutional affection or eruptive fever of smallpox did not accelerate the progress of the vaccine vesicle or cause the formation of an areola around it, as the constitutional vaccine action certainly would have done. The progress of the vaccine vesicle, so long as it continued local, held a regular course, so as to be of the usual magnitude about the 8th day. At this time, however, when the constitutional vaccine action should have taken place, the farther progress of the affection was arrested, (by the presence of the variolous action,) no areola being formed, and the vesicle was soon dried into a crust.

Now this is very unlike what would have taken place in the appearance of the vaccine affection on the arm, had the constitutional affection, which was present on the 18th and following days, been the constitutional affection from a former inoculation with vaccine virus; for in this case, the vesicle, which was advancing regularly on the 18th, would have been accelerated in its progress, and in a few hours would have had a well formed areola around it, both with regard to redness and hardness, which areola would have increased for two or three days, and then have gradually died away. This child was repeatedly visited; and the above circumstances noticed by Dr Farquharson and by Mr Abercrombie as well as by myself.



It is also a proof of the statement which I have given above, and against that given by Dr Adams, that in the cases of the Nelsons mentioned at page 43, the constitutional vaccine affection, as evinced by regular vesicles, having areolæ well formed at the usual period, did not accelerate the eruption of smallpox, which took place at the usual time after the infection of that disease had been casually communicated. I must here observe, that if the variolous and vaccine poisons were the same, as supposed by Dr Adams, and produced the same action on the human constitution, there would not have been any eruption of smallpox in the above cases of the Nelsons, nor in the cases detailed by Dr Woodville, nor in those detailed by Dr Adams himself, at so late a period as the 13th day from inoculation; for if the variolous and vaccine action were the same, the progress of the former would have been accelerated by the presence of the latter about the eighth or ninth day from inoculation, and both would have advanced to maturity together, in the same way as happens when a person is re-inoculated with vaccine or with variolous virus, five days after a first inoculation with the same virus; or as when a person is inoculated with smallpox infection, and is at the same time exposed to it casually; in this case only one disease is produced, viz. that by inoculation, for the action of the infection communicated casually, being accelerated by the constitutional affection which is excited by the inoculation, both are as it were united, and run their course together. That this is really the case, is proved from this circumstance, that if the inoculation should, from any accident, prove ineffectual, the effect from the casual infection takes place about the usual time, i. e. about the 12th day; but if the inoculation proves successful, the symptoms of constitutional affection take place four or five days earlier, and no fever, nor second eruption, corresponding to the usual period of the appearance of the constitutional symptoms from the casual infection, is afterwards observed.

Dr Woodville first observed, that, if a person be inoculated with the variolous poison every day until the fever induced by the first inoculation takes place, all the other punctures have their progress at that time accelerated, and that in the course of one day from the appearance of the fever, even that puncture which had been last made equalled in maturity the one first made ; the same thing holds true with regard to similar inoculations made with the vaccine virus.

Founded upon this law constantly observed in the action of these morbid poisons, Dr Adams still offers a farther proof of the identity of the vaccine and the variolous poisons ; he says, “ If smallpox is inserted to day, and the same subject “ inoculated three or four days after with cowpox, or with “ cowpox to-day, and three or four days after with smallpox, “ the same consequences will follow as if both insertions had “ been of smallpox only, or of cowpox only ; that is, each “ will arrive at maturity at the same time, and the only difference will be that the last insertion will produce a smaller pustule or vesicle.” Page 42.

I am extremely sorry to be again obliged to differ from the above statement given by Dr Adams, especially when I consider that the investigation of the nature and mode of action of those morbid poisons which are capable of being communicated to the human subject, has for many years been his favourite study, and consequently that he must be better acquainted than I can be, with the appearances in the various experiments necessary to be made in order to ascertain these laws, and also with the legitimate conclusions to be drawn from these experiments. As Dr Adams, however, has not given the above statement on the authority of experiments conducted by himself, I must beg leave to state the following experiments which, among many others, I have made regarding this point, and which appear to me to warrant a conclusion quite different from that stated by Dr Adams.

J. Alston, æt. 5 months, was inoculated in the left arm with vaccine virus on Thursday the 21st April 1808. The operation was successful, and she was re-inoculated on the beginning of the 6th day, i. e. on Tuesday the 26th April, by one puncture with variolous virus on the right arm, and by another with vaccine virus, on the same arm, from the advancing vesicle.

29th, An areola appeared in the course of yesterday around the primary vaccine vesicle, and a beautiful small areola, about the size of a shilling, is now formed around the vesicle of the second inoculation; and the vesicle itself, although small, is quite characteristic. The puncture from the variolous matter has evidently taken effect, but is only a little elevated, and feels hard on passing the finger over it.

30th, The areolæ of the first and second vaccine vesicles very complete.

The puncture from the variolous matter advances regularly, but without inflammation, or apparent acceleration.

May 31st, The areolæ around the first and second vaccine vesicles declining.

The variolous puncture still advancing, but there is no redness around it, nor apparent suppuration in the pustule, in short no acceleration of its progress from that of a primary inoculation during its local course.

3d, The areolæ of the vaccine vesicles are now gone, and the vesicles are drying.

The variolous pustule is now well formed, and contains purulent matter.



4th, The variolous pustule dying away ; there has been no particular redness around it, nor eruption of other pustules, as frequently happens during the eruptive fever from inoculated smallpox.

— Gillies, æt. 6 months, was inoculated with vaccine virus (obtained from a vaccine crust which had been preserved for 8 months) by two punctures on the left arm, on the 31st May 1808. Both punctures advanced regularly, and on the 6th June she was inoculated by one puncture in the right arm with smallpox matter, and by another puncture in the same arm with vaccine virus from the advancing vesicles.

June 9th, An areola is well formed around each of the primary vaccine vesicles, and there is also a very distinct areola around the second vaccine inoculation ; and the vesicle, although small, is well formed.

The variolous puncture feels hard on passing the finger lightly over it, and is somewhat elevated, but no surrounding inflammation or apparent acceleration from the progress of a primary inoculation is observed.

11th, The areola around the second vaccine inoculation was very bright and well formed yesterday, and still continues so, and the vesicle appears to be at its height.

The puncture from variolous inoculation is advancing in the usual slow manner of a primary inoculation.

12th, All the vaccine vesicles are drying fast into their proper crusts.

The variolous pustule still advancing, and contains purulent matter.

13th, The variolous pustule still contains matter, but without any surrounding inflammation or eruption of other pustules.

14th, The variolous pustule drying into a crust.

The crust fell off from the second vaccine inoculation yesterday.

15th, The variolous pustule is quite dried into a crust.

In these cases a great difference between the progress of the second vaccine inoculation, and that of the inoculation with the virus of smallpox, was clearly and distinctly marked; for the progress of the former was suddenly accelerated to maturity on the appearance of the areola marking the presence of the constitutional vaccine affection around the vesicles of the primary vaccine inoculation; while the progress of the latter was slow, resembling that of the local stage of a primary inoculation, or that which sometimes takes place when a person is inoculated with smallpox virus who had months or years before gone regularly through the cowpox or the smallpox.

From these circumstances, I am induced to conclude that the variolous and the vaccine poisons are in themselves materially different, also that they excite actions on the human constitution which are essentially different from each other, and consequently, notwithstanding of the cases given by Dr Adams, as above mentioned, that these poisons can never be converted into each other.

The infection of the cowpox has been regenerated under my own observation about four hundred and fifty times on

different persons, and although there have been among these great variety of constitutions, &c. upwards of ten thousand persons having been inoculated, yet neither my colleagues at the Vaccine Institution, nor myself, are sensible of the smallest difference in its mode of action, nor of the smallest approximation in its symptoms to those of the small-pox.



## NO. VII.

*See page 113*

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DIFFERENT opinions have been entertained concerning the propriety of inoculating persons with the cowpox, who may at the time be affected with scald-head, ring-worm, and other eruptions which are attended with very little, if any, perceptible fever. Dr Jenner is opinion that these diseases lessen, and, in many instances, altogether prevent the anti-variolous effect of the vaccine inoculation. "Vaccination on an herpetic skin produces every gradation in the state of the pustule (vesicle) from that slight deviation from perfection, which is quite immaterial, up to that point which affords no security at all." Vide Jenner on the varieties and modifications of the vaccine pustule occasioned by an herpetic state of the skin, page 6. note.

Hence some of the instances of failure in vaccination to give security against the smallpox have been attributed to the presence of these diseases at the time of inoculation.

As an instance how little will, in some cases, disturb the regular progress of the vaccine vesicle, and render vaccina-

tion ineffectual, Dr Jenner gives the following very instructive history : “ A family of the name of Haselton, consisting  
“ of five fine healthy looking children, were inoculated by  
“ me with fluid virus taken immediately from a proper vaccine pustule (vesicle.) On examining the punctures on  
“ the fifth day, I found that on the left arm of one of the  
“ children the pustule (vesicle) was advancing too rapidly.  
“ It was of an irregular form ; contained already an opaque  
“ fluid, and was surrounded by an efflorescence of a dusky  
“ red colour to the extent of one-third of an inch. Such  
“ an intolerable itching was excited that the boy (who was  
“ only three years old) could not be prevented from rubbing it. This appearance led me to an examination, and  
“ on the child’s head I observed an herpetic blotch not much  
“ larger in circumference than a shilling. The hair around  
“ the part was stiffened by the concreted ichor oozing from  
“ the sore, which had made its appearance *about ten days*.  
“ No eruption shewed itself in any other part of the body.  
“ The pustule was repeatedly broken by the child’s scratching and rubbing it ; and the inflammation on the arm,  
“ which began to spread so early, on the eighth and ninth  
“ days became very extensive. The child at the same time  
“ was hot and restless. A soft amber coloured scab now  
“ began to form, but this being rubbed off, the part ulcerated and healed slowly, *leaving a cicatrix deeper and larger*  
“ *than in ordinary cases*. The disease on the scalp was now  
“ quickly subdued by the use of the tar ointment, and at  
“ the expiration of six weeks from its commencement, the  
“ inoculation was repeated ; when a pustule (vesicle) formed, which went through all its stages with perfect regularity. The rest of the children inoculated at the same  
“ time went through the cowpox in the ordinary way without any irregular appearance.” Vide *ut supra*, page 9.

On the other hand, Dr Jenner, in the same publication, at page 11, gives an instance of a child whose face was involv-

ed in one continued crust, in whom, however, the progress of the symptoms of vaccination was quite correct, and effected a cure of the herpes, which had for nearly two years resisted every application made for that purpose. "On the decline of the vaccine vesicles, the incrustation (on the face) began to be less coherent and to drop off, and at the expiration of a fortnight, the face was smooth, no vestige of the disease remaining except a slight inflammation of the eye-lids." Dr Jenner adds, "cases of this sort have become familiar; Mr Ring has given several in his very copious treatise on the cowpox, and they have been mentioned by other authors both here and on the continent." And also, "I have in like manner sometimes seen papulous eruptions which had long proved troublesome speedily swept away."

Dr Coxe of Philadelphia mentions a case of *tinea capitis* which had continued about seven months, and had extended over the whole head, in which inoculation with vaccine virus, after having twice failed, succeeded on a third trial, and not only advanced through all the stages regularly, but also effected a cure of the former disease. The patient was afterwards fully exposed to the infection of the smallpox with impunity. See Med. and Phys. Journal, page 340. vol. xviii. According to the reports of the French inoculators, the scald-head, *crusta lactea*, and other herpetic eruptions, have not, amongst them, appeared to impede the regular progress or efficacy of vaccination. *U. s.* vol. xiii. p. 250. The experience of Dr Wood of Newcastle, and of Mr Anderson, also authorises them to draw the same conclusion. *Ut supra*, vol. xv, p. 137.

I have inoculated children affected with scald-head, *crusta lactea*, or milk blotches, and various other eruptions, which were attended with no perceptible fever; and I have observ-



ed that in some of these patients the progress of the vesicles was quite regular, and there was obtained complete evidence of a constitutional vaccine affection, by the test of a second inoculation conducted in the manner hereafter mentioned ; while in others such a degree of itching was excited at the part inoculated, that the vesicle was unavoidably and completely destroyed, by rubbing or scratching it at a very early period ; or such a degree of inflammation took place on the second or third day after inoculation, as to destroy the structure of the vesicle, and to occasion a pustule containing purulent matter ; which pustule generally terminated in a similar manner with the eruptions formerly occupying the other parts of the body. Nor were these irregularities of the vaccine vesicle overcome, unless by first curing the primary eruptions, after which the patients passed regularly through the process of vaccination.

To account for the various results of vaccination in different individuals, under the above circumstances, and consequently for the different opinions entertained by practitioners concerning the propriety of inoculating persons for the cowpox who may be at the time affected with the different eruptions above mentioned, I would observe that each of these eruptive diseases is to be considered as consisting of two stages, neither of which have any known fixed period of duration. The first of these may be called the acute stage, during which there is present in the body more or less of a constitutional morbid action. This is often evinced by the slightest scratch, on skin which is apparently sound, occasioning an unusual degree of inflammation, and quickly running into suppuration, or terminating in a festering and troublesome sore. The second may be called the chronic stage, during which the constitutional morbid action has greatly or altogether subsided, and the disease is continued by habit, or has become as it were domesticated in the constitution, in the same man-

ner as some of the symptoms of hooping cough are continued long after all fever and infection from that disease have ceased. During the former of these stages, inoculation for the cowpox is improper, and must generally fail to impart the desired security against the smallpox, while in the latter stage the inoculation may not only be done with safety but with a fair prospect of curing the former affection by changing the state of the skin, or of the constitution, by means of the vaccine action ; on the subsiding of which the natural or healthy state of the skin will again be established.

Seeing then that from experience, as well as from the above reasoning on the subject, much doubt must generally occur concerning the security of our patient against the smallpox infection, if inoculated while affected with any of the above mentioned eruptions, it ought always to be an established rule in practice first to cure the eruption, and after some time, i. e. after the natural healthy state of the skin has been established, to subject the patient to vaccination. If, however, this rule cannot be observed (as from a variety of circumstances may sometimes happen) then the whole of the symptoms during the progress of vaccination must be examined with the most minute attention, and the smallest irregularity in any of these must be regarded as a cause of uncertainty whether the operation has been effectual, and for reinoculation at some future period ; otherwise inoculation under such circumstances must continue to prove a fruitful source of disappointment to all concerned.

The impropriety of inoculating persons labouring under any of the acute diseases to which mankind are liable, as fevers of different kinds, fluxes, &c. is too obvious to require notice here, but when any of these diseases supervene before the process of vaccination has been completed, then, as the vaccine action may, by the presence of any of these diseases

in the constitution, be either impeded, or altogether prevented, the symptoms must be very diligently attended to, and the result of the operation judged of by the rules hereafter mentioned for ascertaining the presence of the constitutional affection of cowpox.

How long after exposure to the infection of smallpox we may inoculate for the cowpox, with a fair prospect of preventing that disease, is very uncertain. I have frequently been disappointed, but more frequently have I succeeded in preventing the smallpox, when I have inoculated persons with the cowpox two or three days after they were exposed to the smallpox infection; I have also frequently succeeded, by the same means, in preventing the smallpox in persons who had been fully exposed to the infection by living in the same room for seven, eight, and even ten days, with patients labouring under that disease; and here I have to remark a curious circumstance, although it be one which I have frequently observed, viz. that persons living in the same house or room with others labouring under smallpox, are not so readily infected as strangers who may happen to be introduced for a short time only into the room in which the patient lies.

It has been observed by Dr Jenner, that persons who have recently been using much sulphur cannot readily be infected with the cowpox. Of thirty persons recently cured of the itch by a course of sulphur, and inoculated immediately afterwards by Dr Jenner, not one took the disease. My own experience leads me to acquiesce in this observation of Dr Jenner; but whether this seeming power of resisting the vaccine infection when the body is charged with sulphur depends on some particular action excited in the skin, or in the constitution, by the sulphur, which is inimical to the vaccine action, or whether it depends merely on the fumes of the sulphur mixing with the vaccine fluid, and so rendering it inert,



has not been determined. With a view of ascertaining this point, I made the following experiments. A quantity of vaccine virus was collected from several vesicles upon a plate of glass. From this stock two patients were inoculated by two punctures made on each. With the remainder of the virus I now mixed a small quantity of the flowers of sulphur. This mixture was exposed to the heat of my hand, and the virus and sulphur were well incorporated for several minutes: several persons were then inoculated with it. The affection in all proceeded with a perfectly regular and equal progress, so that on the eighth day from inoculation no difference was perceptible between those inoculated with the pure virus and those inoculated with the virus mixed with sulphur. As far as these experiments go, we may conclude, that the power of resisting the vaccine infection in persons who have recently used much sulphur depends on a particular action excited in the skin or on the constitution, which action is inimical to the vaccine action.

Persons who undertake to conduct vaccination cannot be too careful in examining into the state of health of their patients before performing the inoculation. Every inoculator must have observed, that from very slight causes operating on the skin, or on the constitution, the regular progress of the vaccine affection has been more or less disturbed, and frequently rendered altogether ineffectual. This I have very frequently experienced during the irritable and feverish state induced in children by teething, even when little apparent indisposition was observed.

I would therefore recommend, that it be observed as a general rule, never to inoculate any person with the cow-pox who is, after minute examination, discovered to be labouring under any morbid state or affection whatever, either local or constitutional, which it is in the power of the me-

dical art to remove, or which may only require a little time to be by nature changed into the healthy state. Thus, I am certain, we should cut off one great source of failure in vaccination, and thus also we should avoid many of those causes which have led to much perplexity in forming an opinion concerning the future security of our patient against the attacks of the smallpox.

## NO. VIII.

*See page 136*

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It affords me much satisfaction to find that the mode of obtaining and preserving the cowpox infection which I have proposed, viz. by using the crusts of the vesicles, has been practised with great success by inoculators in all quarters of the globe.

Early in the year 1803, I sent a vaccine crust to Dr Jenner, and requested that he would make trial of it for inoculation. The following extract from his letter, of date 15th April 1803, in answer to mine, shows the result. "I put your crust into the hands of Mr Ring, who informed me yesterday that it had succeeded in producing a perfect pustule (vesicle). Experience now tells us this is a good mode of sending the virus to distant parts."

Dr Coxe of America has used the vaccine crust with great success in producing perfect vaccination: he says, "I have lately succeeded in exciting the cowpox with a scab nine months and three weeks old, the longest period, as far as I know, in which it has proved successful:" He adds,



“this discovery of Mr Bryce, respecting the scab, is of vast importance, as it will enable us to preserve the infection amongst us, I hope, without difficulty\*.” Dr De Carro, physician in Vienna, has also found that matter procured by dissolving the vaccine crust generally proves successful in exciting the cowpox †.

In one of the official reports of Mr Shoolbred, superintendent general of vaccine inoculation in Bengal, are contained many instances not only of the efficacy of the vaccine crust in exciting cowpox regular in all its symptoms, but also of the great superiority which, in that country, this mode of preserving the virus possesses to every other.

In accounting for the little progress made in vaccination in the upper provinces of Bengal, Mr Shoolbred says, “The extreme difficulty of keeping up the disease in a very high temperature of the atmosphere, even by inoculating from subject to subject with recent fluid matter, as noticed in my report of last year, seems to be the principal cause that so little has been done at the vaccine stations beyond Patna. So early as April last year, I began to experience such frequent failures in my inoculations with recent fluid matter, that I became seriously alarmed for the loss of the virus under my own charge. I therefore wrote to the different superintendants to put them on their guard against such an occurrence. From the subordinate stations at Dacca, Moorshedabad, and Patna, I received satisfactory answers, assuring me that their inoculations continued to be successful, and that they were then under no apprehension of losing the disease. But at Allahabad, the disease had

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\* Vide Med. and Phys. Journal, vol. xiii. page 48.

† Vide ut supra, page 250.

“ been lost, even before the receipt of my letter. This hap-  
“ pened on the 20th April 1804, from no obvious cause, Mr  
“ Gibb having then failed in communicating the disease to  
“ five patients, whom he had inoculated with fresh fluid  
“ matter in each arm with the greatest care. Mr Gibb,  
“ during the hot months and the rains, made several unsuc-  
“ cessful attempts to restore the disease by means of dried  
“ matter; and even when the weather became colder, in  
“ October, November, and December, his exertions to that  
“ effect, although directed with the utmost zeal and atten-  
“ tion, were equally unavailing. Matter was supplied to  
“ him liberally by Mr M’Nab, and all the methods then in  
“ use were assiduously persevered in for upwards of two  
“ months, during which he inoculated ten or twelve children  
“ weekly, all however without effect, until Mr Evans sent  
“ him a mature vaccine scab from Cawnpore on the first of  
“ January, with which he at last succeeded in producing  
“ the disease. This is a method of preserving the vaccine  
“ virus in a state of activity with which we have only lately  
“ become acquainted, and of which farther notice will be  
“ taken presently.

“ The history of the failure and restoration of the disease  
“ at one station will apply pretty exactly to the whole of  
“ those beyond Patna, at which such an accident has occur-  
“ red. It has happened uniformly from the failure of inocu-  
“ lation with recent fluid matter in the hot weather, without  
“ any obvious cause to which such failure can be ascribed,  
“ unless it be to the virus having actually lost its infecting  
“ quality; and as long as the hot weather continues, it has  
“ hitherto been found extremely difficult, if not impossible, to  
“ restore it. At Benares and Cawnpore, the disease was lost  
“ nearly at the same time as at Allahabad, and the same  
“ thing happened in Gorruckpore, where Mr Fraser, from  
“ the more moderate temperature of the climate, entertained  
“ hopes of preserving it through the year. It was preserved

“ at Furruckabad till September, when it also failed at that  
“ station as at the others, by an apparent loss of power in the  
“ virus. To all these stations it was found to be impossible to  
“ restore the disease by the usual means of transmitting mat-  
“ ter: *they were at length, however, put in possession of the virus*  
“ *at Furruckabad in October, at Cawnpore in November, and*  
“ *at Benares and Allahabad not till January, all by means of*  
“ *the dried scab, after other methods had repeatedly failed.\**”

After farther pointing out the circumstances which tended to impede the practice of vaccination from becoming general, and which, from a great variety of correspondence with the inoculators at the different vaccine stations, appear to have been partly the prejudices and apathy of the natives with regard to inoculation, but chiefly the difficulty, from the heat of the climate, of obtaining and preserving the virus in an active state for propagating the disease, Mr Shoolbred adds,  
“ Having occupied so much of the time of the Board in de-  
“ tailing the obstacles which have hitherto tended to impede  
“ the progress of vaccine inoculation, I have much satisfac-  
“ tion in being now able to point out some circumstances  
“ which promise in a short time to lessen, if not entirely to  
“ remove, both the difficulty arising from the climate, and  
“ from the prejudices hitherto entertained against the disease  
“ by the natives. These consist of *a new and more succes-*  
“ *ful method of preserving the virus in an active state*, and  
“ in the recent adoption of such measures as cannot fail to  
“ conciliate the good will of the smallpox inoculators, and to  
“ inform the natives in general of the true nature and great  
“ utility of vaccine inoculation.”

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\* See Report on the state and progress of vaccine inoculation in Bengal during the year 1804, submitted to the Medical Board at Fort William, by John Shoolbred, superintendant-general of vaccine inoculation. Printed at Calcutta in 1805.



“ In the appendix to my Report of last year, I enumerat-  
“ ed all the methods then known for preserving the virus in  
“ an active state ; namely, the armed lancet, the impregnat-  
“ ed thread, the plain glass plates, the glass plates with a  
“ cavity for containing the matter, the thorn, the ivory lan-  
“ cet, and the very ingenious exhausted tubes of Mr Giraud.  
“ All these methods were found to be exceedingly precarious  
“ except the last, and of that it was impossible to make any  
“ considerable use owing to the want of tubes in this coun-  
“ try. Through the assistance of Dr Dinwiddie, however,  
“ I procured a few tubes, by one of which I succeeded in re-  
“ storing the disease to Prince of Wales’s Island, after a pas-  
“ sage of eighteen days, and as the virus in the tube continu-  
“ ed at that time as fluid as when taken from the pustule, I  
“ have no doubt but it would have retained its infecting  
“ quality for a much larger period. In that belief I com-  
“ missioned a considerable assortment of the tubes from their  
“ ingenious inventor, but which the knowledge of a still  
“ easier and better method of preserving the virus will now  
“ render unnecessary.

“ This method, as simple as it is effectual, consists merely  
“ in the preservation of the peculiar scab or crust into which  
“ the vaccine pustule is gradually converted towards the  
“ conclusion of the disease, and in which the virus in a dry  
“ state is found to reside with unimpaired activity for a great  
“ length of time.

“ It was not till September or October last year, that I  
“ became acquainted with this valuable property of the ma-  
“ ture vaccine scab. I then first saw the Treatise on Cow-  
“ pox published by Mr Bryce in 1802, who has the merit of  
“ first introducing us to the knowledge of this useful disco-  
“ very. I immediately made trial of it ; and was much gra-  
“ tified to find, that with a scab a month old from the time  
“ of its dropping from the arm, I succeeded nearly as well

“ as with recent fluid. Having an application for virus from  
“ Cawnpore in November last, I divided a scab, and sent  
“ one half to that station, and the other to Prince of Wales’s  
“ Island : It succeeded perfectly at both places ; at the latter  
“ after it had been kept merely wrapped up in writing paper  
“ for thirty-four days. A scab has also succeeded at Fort  
“ Marlborough, after a passage of forty-four days ; and I  
“ have lately used one four months and a half old, on two  
“ children, making two punctures on each of their arms,  
“ which produced not less than six perfect pustules (vesicles)  
“ and the disease in every respect went through the regular  
“ course. The discovery of the preservative quality of the  
“ scab must therefore be considered as a circumstance of the  
“ greatest importance to the future progress of vaccination,  
“ leaving nothing farther to be desired on the very delicate  
“ and difficult subject of preserving the virus and transmit-  
“ ting it to distant places.”

“ His Excellency the Most Noble the Governor General  
“ in Council had authorised the sending of children from  
“ Prince of Wales’s Island to China, in order to transmit the  
“ disease to Canton by means of successive inoculations.  
“ But as Mr Herriot at Prince of Wales’s Island was made  
“ acquainted with the properties of the vaccine scab before  
“ that intention could be carried into effect, the trouble and  
“ expence of this plan may now be saved by his forwarding  
“ scabs by the China ships as they pass Prince of Wales’s  
“ Island on their voyage. The same thing may be said of  
“ transmitting the disease to New South Wales, or wherever  
“ else it is likely to meet with a cordial reception.”

Extract of a letter from C. Campbell, Esq; to Jo. Shool-  
bred, Esq; dated Fort Marlborough, 7th April 1805.

“ We have every hope of naturalizing the vaccine disease  
“ to this island. The prejudices of the natives daily yield,

“ and the whole of the southern regions willingly receive it.  
“ The disorder is carefully kept alive at two stations, and had  
“ we any fears of losing it by any untoward accident, the  
“ precaution of preserving the vaccine scab at intervals would  
“ give the greatest security.”

The following extract of a letter from Mr Reed to Mr Shoolbred, announces the introduction of the vaccine inoculation into the city of Delhi, by means of the vaccine crust, and the inoculation of the royal family residing there.

“ Sir, I have the pleasure to inform you, that I have succeeded in procuring the vaccine disease. On the 12th of last month, I received a scab from Futteh Ghurr, with which, on different days, I inoculated fifteen children. From one of these, I on the 24th inoculated two other children, and from them, on the 31st, three more; and on the 6th instant, I carried one of them into the palace, and inoculated Mirza Selim the son of Acbar Shah, the king’s eldest son, and also one of the young princesses. It succeeded perfectly well with both; and I yesterday from them inoculated four more of the house of Timur. They are quite delighted with it in the palace, and the children are there so numerous, that I hope to have a regular supply for a long time. They know nothing of the cowpox in this part of the country; nor can I find that inoculation for the smallpox was ever practised at Delhi; it certainly is not at present, and that disease is often fatal to vast numbers.”

Dated “ Delhi, 13th June 1805\*.”

In addition to the above evidence concerning the efficacy of the vaccine crust in reproducing the cowpox affection re-

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\* See Mr Shoolbred’s Report, *ut supra*.



gular in all its stages, I have to add the united testimony of my colleagues at the Vaccine Institution of this place, for the gratuitous inoculation of cowpox, where we have very often restored the disease in its perfect state, when the recent infection had been lost from the non-attendance of the children at the proper period for taking it; and have also, times almost innumerable, inoculated the same person in one arm with recent virus, and in the other with virus obtained from a crust, without being able to observe any difference either in the appearance of the vesicle, or in the regularity of the symptoms thus produced.

The attention necessary in selecting the proper crusts has been mentioned at page 123; and I have now only to observe, that when the margin of the crust is observed to be of a much lighter colour than the centre, the light coloured part should be cut off, and the central dark coloured part only used; the harder and more brittle the crusts are, they will be found to be the more efficacious. If they be light-coloured or tough, it marks them to have been formed from, or mixed with, a large proportion of purulent matter, and therefore improper to be used for inoculation.

By soaking one of the proper vaccine crusts in cold water in the manner already mentioned, and spreading the solution of a moderate degree of thickness over a small plate of glass, as mentioned at page 115; or upon the stopper of the phial described at page 116, and allowing it to become perfectly dry, it will be found to retain its activity for a very long period. I have thus preserved it active upwards of five months; inoculating from it every ten or fourteen days, till the whole was expended, in order to ascertain for how long a period it would continue to produce the disease. It is to be observed, however, that when using the crusts thus prepared, no more of them should be dissolved at a time than may be necessary to perform the inoculations re-

quired, and the glass plate or stopper, upon which the remainder is lodged, should always be allowed to become quite dry again before it is covered up. If the crusts, either before or after being prepared, as above mentioned; be kept in a damp state, and in a high temperature, they soon acquire a strong and peculiar smell, which marks the loss of their power to reproduce the cowpox, and that they have become useless.

Besides the advantages already mentioned as resulting from this new mode of obtaining and preserving the infection of cowpox, it is farther to be observed, that, by using the crusts for inoculation, the progress of the vesicles will not be disturbed by puncturing them, nor will they be exhausted of virus at an early period of the disease; the prevention of which, when we consider that, from these circumstances, festering and troublesome sores are sometimes produced, and more especially that from them the antivariolous process is frequently prevented from taking place, we must regard as of considerable importance in conducting vaccination.

Dr Clark of Nottingham has stated that if the vaccine vesicles be broken at an early period of the disease, and continue to discharge their contents, even although an inflamed and indurated areola may be formed around each, at the proper period of the affection, yet in such cases the constitutional vaccine action does not always take place, as is proved by patients under such circumstances passing again regularly through all the stages of the cowpox on being reinoculated. *Med. and Phys. Journal*, vol. xvi. page 137. On the subject of the vaccine vesicles being rubbed and broken either accidentally or intentionally, and of draining them of their contents, by taking virus from them for inoculation, as causes of failure in vaccination, to afford the desired security against the smallpox, see the "Address of the Royal Jennerian Society," page 40, 42, 43. Obs. by Mr Dunning in *Med.*

and Phys. Journal for June 1805. Dr Willan on Vaccine Inoculation, page 33. Mr Ring's Obs. Med. and Phys. Journal, vol. xiv. p. 403. Treatise on the Cowpox, by Geo. Bell, 2d edit. page 32. Adams on Vaccination, page 111.

As a knowledge of the disadvantages as well as of the advantages attending the different modes recommended for obtaining and preserving the vaccine infection is of much importance in practice, I shall beg leave to make some farther remarks on these points.

The mode of obtaining and preserving the vaccine virus, which is chiefly recommended by the committee of the Central Society for propagating the cowpox in France, consists in applying one extremity of a capillary tube to a vaccine vesicle, *open over its whole surface*; the fluid matter rises in the tube, and when the latter is filled, both of its extremities are sealed with sealing-wax. This mode of obtaining the infection implies the complete destruction of the vesicle from which it is obtained; for if a vesicle be *opened over its whole surface*, at the proper period for taking the virus, it will not readily dry up again, so as to run a regular course, but will in almost every instance continue to discharge its contents as fast as they are secreted, and will generally terminate in a suppurating and troublesome sore. Besides, if there be not at least one other vesicle on the same patient which is left entire, the object of vaccination may, by this rude treatment, be frequently left unaccomplished, even although an inflamed and indurated areola be formed around this open vesicle at the proper period of the disease.

With regard to the virus being preserved in an active, and although fluid, in an unchanged state, in the capillary tubes, the experience of the French inoculators certify to us that it is so, and that certainly is the best criterion to judge from; but I am convinced, from my own experience, that however



completely it may be secluded from the external air, the vaccine virus in a fluid state is much more apt to undergo some change whereby its qualities may be deteriorated, if not altogether altered, than when it is preserved in a dry state. Mr George Bell appears to approve of the whole of the above practice as recommended by the French inoculators : he says, " The method proposed by Mr Brettonneau, and " recommended by the committee in Paris for preserving the " vaccine virus in its fluid and active state, is extremely in- " genious, and I have no doubt of its answering the purpose " completely \*." But Mr Bell does not seem to have recollected that this rude mode of treating a vesicle, at an early period of the disease, may often be attended with very bad consequences †, nor to have known, that the same mode of preserving the virus had not only been proposed but practised in this country several years ago, but did not always answer the purpose completely. Dr Wood of Newcastle-upon-Tyne, informs us, that " Some vaccine matter was preserved " last winter (1803) for nearly six months at the Dispensary " here in capillary tubes hermetically sealed ; it had been " preserved so before, and answered very well. This last " spring, all the children (about 200) inoculated with this " matter, had their arms violently inflamed, and, instead of " the regular pustule and scab, a large crust of a brown colour, with ulceration, took place." *Med. and Phys. Journal*, vol. xiii. page 61. This virus, therefore, although completely secluded from the external air, must have undergone some change, whereby it was injured for the purposes of inoculation ; for although the desired security against the small-

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\* See Treatise on the Cowpox, page 24.

† See Treatise on the Cowpox by George Bell, page 32.

pox appears to have been obtained by the persons who were inoculated with it, yet the symptoms produced by it were so unusual and severe, that the inoculation was stopped until fresh infection was received from London, which produced the disease in its usual mild form.

Mr Bell in his treatise on the cowpox, when giving instructions about preserving the virus, says, "If the inoculation is to be performed *in the course of a few days*, or if the matter is to be sent to a short distance only, it may be taken on a lancet;" which lancet he recommends to be wrapped up in a piece of tin-foil, or gold-beater's leaf, &c., to prevent the matter from being injured by exposure to the air. See page 19. In a point of such importance as that of preserving the vaccine virus unchanged, the above instructions appear to be too vague; for the term "*in the course of a few days*," may imply four or five days, or even more; a period much too long in my opinion for the vaccine infection to remain on a common lancet, without undergoing a considerable change. If Mr Bell had recommended it to be taken upon a lancet of gold, of platina, or of ivory, and ordered it to have been completely dried before being wrapped up, the instructions would have been deemed correct; but as a common lancet charged with vaccine virus, although wrapped up as Mr Bell recommends, will often be found in a rusty state at the end of two days, (nay I have known this change to take place in the course of 24 hours, when the virus was not thoroughly dried before wrapping it up) this mode of preserving the infection must always be used with great caution, especially as we are informed, that, by inoculating with matter upon a rusty lancet, we are often disappointed of success by producing what is called (in my opinion improperly) the spurious cowpox. See Mr Bell's Treatise, page 55.

According to my experience, the vaccine infection should never be used after being twelve hours upon a common lan-

cet, and if it be expected that it should remain even for that length of time without being injured, it ought to be carefully dried before being wrapped up, or in any other way secluded from the external air.

The mode of preserving the vaccine infection which Mr Bell recommends as the "easiest and best," appears, when considered, to be one which must often occasion disappointment to those who practise it. He says, "This," (*viz.* the virus as it oozes from the vesicle) "being collected on two thin plates of glass, each about an inch square, the two pieces should be laid close together when the matter is yet fluid, by which means, when the serous part of it has evaporated, the plates of glass will be agglutinated to each other. On the pieces of glass being laid together, they should be covered with tinfoil, or moistened bladder, to keep them more firmly in contact." Page 20.

It is here to be considered how much of any fluid, such as that issuing from a vaccine vesicle, can be supposed to remain between two polished surfaces "laid close together," and kept "firmly in contact" by means of moistened bladder? If any does remain, it certainly cannot exceed the merest pellicle; And even that can remain only in some accidental cavities on the surfaces of the glass plates, the rest being necessarily forced over the edges of the plates and lost; hence when inoculation comes to be performed, that operation will frequently be done with pure water in place of the vaccine infection. If Mr Bell generally preserves the virus which he uses in this way, it may account for his performing so many ineffectual inoculations, as he says he does, before he can produce the disease. See Treatise page 69.

If the vaccine virus is to be preserved upon glass plates, it ought to be done in the manner already mentioned at page



115; and I would have it observed, as a general rule, that in every instance in which it is intended to preserve the vaccine infection above one or two days, it should be dried completely, be afterwards carefully secluded from the air, and, when used for inoculation, be managed in the manner hereafter to be mentioned.

## NO. IX.

*See page 145*

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THE following method of performing inoculation has long been practised by Mr Abercrombie and by myself with great success. A drop, or small quantity, of the vaccine infection, fluid as taken from the vesicle, is deposited upon the arm, at the spot where the operation is to be performed, and a number of very slight scratches or punctures are made with the point of a lancet, in the centre, or within the margin of this drop of the virus, so that the appearance of blood may just be perceived. The number of slight scratches or punctures may amount to six or eight, but they should be made so near each other as to be all included within a space equal to the circumference of a very small sized vaccine vesicle. And it is to be observed, that the more slight these wounds are made, and the less of that common inflammation takes place after them, which is the natural consequence of every wound, the more certainly does the inoculation succeed.

If the virus to be used is still fluid from a vesicle, no preparation of it is necessary; if the inoculation, however, is to

be performed from dried matter, this is first to be rendered fluid by mixing it with a due proportion of cold water in the manner formerly mentioned at page 131 ; and I must here remark, that neither warm water, nor the steam of water should ever be used for dissolving or diluting the vaccine virus ; for the peculiar quality of this infection seems to be of such a delicate nature as to be very readily destroyed, or rendered effete by exposure to what may be considered a very gentle degree of heat \*. Of the propriety, therefore, of Mr Bell's directions to dissolve the vaccine crust in *warm water*, when about to use it for inoculation, I have much doubt, and the more especially as his success with virus derived from this source has not been nearly equal to that experienced by others : Such directions certainly were not given by me when this new mode of obtaining the virus was proposed, nor, although it be said by Mr Bell, that " the efficacy of a solution " of the scab in *warm water* in producing the genuine cow-pox is farther corroborated by Mr Shoolbred," &c., do I find, that either Mr Shoolbred himself, or any of the Indian inoculators in their correspondence with him, have ever mentioned their having used *warm water* for dissolving the vaccine crust : nay, Mr Shoolbred has expressly desired the solution of the crust to be made in cold water.

If Mr Bell therefore has only sometimes succeeded in producing the cowpox with a solution of the crust (see Treatise page 23.) or has met with untoward symptoms by inoculating with such a solution (see Treatise, page 52.) it appears highly probable that these circumstances were entirely owing to his peculiar mode of operating ; for the symptoms alluded to, he expressly says, " take place in some cases where the inocu-

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\* See Instructions of the Royal Jennerian Society. See also Mr Shoolbred's Report *ut supra*.



“ lation is performed with a solution of the scab, or crust  
“ of a cowpox vesicle, in *warm water*.”

The French inoculators also, in their mode of using the vaccine crusts for inoculation, appear at first to have deviated considerably from that recommended at page 131. They reduced the crusts to a very fine powder previous to dissolving them ; and although I cannot assert from experience that by reducing them into a powder we render them inert, never having tried that experiment, yet it is certain that they obtained greater success from the solution when this previous step was omitted ; and that it was in consequence of having made this omission that the Committee was enabled to report on this particular subject. “ Qu’il a enfin obtenu un succès complet.” Vide Séance general, &c. *u. s.* page 85.

## No. X.

*See page 166*

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IN confirmation of the above opinion concerning the mere local action of the virus of cowpox, the constitution remaining unaltered, there are now on record but too many proofs. In the Report of the Royal Jennerian Society for January 1806, it is stated, "That it is a fact well ascertained, that "in some particular states of certain constitutions, whether "vaccine or variolous matter be employed, *a local disease* "only will be excited by inoculation, the constitution remaining unaffected. Yet that matter taken from such local, vaccine, or variolous pustule, is capable of producing "a general and perfect disease." That the appearance also of this local affection has, in many instances, been such as to deceive the most experienced inoculators concerning the security of their patient against the attacks of smallpox, there cannot be a doubt; for many cases are reported by practitioners in which the symptoms of the affection at the part inoculated appeared to be so regular and perfect, that no doubt was entertained of the antivariolous process having been accomplished until the patient really suffered an attack from the smallpox. The affection produced on a child

vaccinated by Mr Powel at Chatham appears to have been of this kind. The child suffered an attack from the smallpox within a month after vaccination, yet, with infection taken from the vaccine vesicle on the arm of this child, Mr Powel had inoculated several other children, all of whom were exposed to the contagion of the natural smallpox, and were also inoculated with variolous matter without effect. See Ring's Treatise on Cowpox, page 599.

The affection produced on the child of Mr Deacon, who was inoculated by Mr Ring of London, appears also to have been merely local; for Mr Ring states that the appearance of the arm was regular, and that two or three children were inoculated from this patient. Yet this child also suffered an attack from smallpox. Med. and Phys. Journal, vol. xiv. page 404. Mr Ring also says, "Dr Nelson lately informed me of a decided case of the smallpox, in a child who had been vaccinated at the Vaccine-pock Institution, in whom he had witnessed the regular progress of the cowpox.—The case occurred in a child of Mr M'Pherson in Fitzroy Market; and I believe no one who saw it could possibly doubt of its being the smallpox," u. s. p. 404. Many other cases might be adduced, in which the cowpox affection, although it appeared quite regular at the part inoculated, yet failed to give the desired security against the smallpox; (See *Willan on Vaccine Inoculation*, page 50 et seq.) And it is also my opinion, that those vesicles mentioned by Dr Willan, (page 39,) as irregular vesicles, which have often been mistaken for the genuine vesicles, "and which," according to him, "do not *wholly* secure the constitution from the smallpox," are to be considered as mere local vesicles. For it is more consistent with physiological observations to suppose that some peculiarity of constitution should exist in those persons in whom the irregular vesicles appear, by which the constitutional affection of cowpox is altogether prevented, and by which the subsequent disease of smallpox is modified, if it



can be called modification, than to suppose that the vaccine action takes place to a certain degree only on the constitution, imparting a proportional and limited degree of security, as seems to be Dr Willan's opinion. If the vaccine action takes place at all on the constitution, I am clearly of opinion that it will be compleat; but I am also of opinion that certain peculiarities of constitution, or idiosyncracies, may exist, whereby the constitutional vaccine action may be altogether resisted at the time, and whereby the subsequent variolous disease may be modified or rendered more mild than usual; because, when the casual smallpox has been epidemic, I have frequently met with cases in which, although the person had not been vaccinated, the pustules were small, hard, papuliform, and run a course exactly similar to that described by Dr Willan, and other practitioners, as the course of variolous eruptions subsequent to, and thought to be modified by, vaccination; and such cases are by no means uncommon when the smallpox is communicated by inoculation without having been preceded by vaccination. Of certain causes operating on the constitution, so as to occasion these local or irregular vesicles, more will be said hereafter.

In order to account for those failures which have taken place in imparting the desired security against the smallpox, from inoculation with the cowpox, and which have been so frequent in London and in its neighbourhood, that this new inoculation has in that city been for sometime nearly at a stand, many practitioners have divided the cowpox into the genuine and the spurious kind; the former giving perfect security against the smallpox, the latter giving none; and to this division we must (according to Dr Willan) add another kind, viz. that produced from some irregular vesicles. "The effect of vaccination," he says, "when there are irregular vesicles, is different in different cases. They appear fully to secure some individuals from the infection of the smallpox, in others the constitution is but imperfectly guarded against

“ the smallpox by these vesicles, the disease taking place  
“ after them at different intervals under a particular form.”

Page 44.

These distinctions many authors have endeavoured to establish, and to describe minutely, so as to be easily detected in practice, but, in my opinion, with little success; for we still hear of many instances in which the practitioner has been deceived in his opinion concerning the safety of his patient, notwithstanding of the rules prescribed by those authors for forming an opinion with precision on this point. And the above quotation concerning the effects of irregular vesicles on the constitution shows the distinction made by Dr Willan to be not only useless, but hurtful in practice, because if these irregular vesicles effectually secure some constitutions, and only imperfectly secure others, how are we to distinguish whether our patient be perfectly or imperfectly protected, and to what degree?

The terms, therefore, of spurious cowpox, and of irregular vesicles, producing imperfect vaccination, appear to me to be contrived rather with a view of explaining something not understood, than from any correct observations made on the subject, terms contrived under which the practitioner might skulk in case of failure or mistake, and the more nearly the descriptions of these said spurious and irregular vesicles are made to resemble the genuine vesicles, and the greater difficulty there is in distinguishing between them, the more effectually will this shield protect those who use it.

The term spurious cowpox, as applied to the inflammation which takes place subsequent to inoculation, and terminates in a pustule, in a creeping or spreading ulceration, or in erysipelas, is highly improper, because these affections neither in appearance, nor in their effects upon the constitution, have the smallest resemblance to the cowpox; with equal

propriety might the effects from the prick of a thorn, from a wound inflicted with a rusty lancet, from the insertion of a small quantity of acrid matter of any kind under the cuticle, or from the bite of a leech, in some constitutions, be denominated the spurious cowpox, for from such causes will a small phlegmon with a hard base, or a degree of festering or creeping ulceration with an inflamed margin, frequently be produced, yet who that ever saw the cowpox affection, or studied the appearance of it as described by authors, would ever confound them, or class as of the same species things which, in their appearance and in their effects upon the human constitution, the only qualities by which we know them, are so very different. The instances in which these appearances take place after inoculation, are certainly to be considered as cases of failure, and as much unconnected with the cowpox as if no effect had been produced from the operation. The satisfactory proof of this is, that if the persons on whom such appearances occur be afterwards inoculated with the cowpox, they will go through all the stages of the disease in a regular manner.

Concerning the term "irregular vesicles," as applied to those terminations of inoculation which are said to produce imperfect vaccination, I would observe, that although, in a philosophical point of view, it may not be so improper as the term spurious cowpox, yet in a practical point of view it is in my opinion also very improper, and ought not to be adopted. In the first place, the adoption of this term "irregular vesicles," with all the consequences resulting from it, serves, as has already been observed, to screen ignorance, or inattention in the operator; for in some constitutions they are said to give perfect security, while in others they afford only an imperfect security against the smallpox. In the second place, the appearances and other symptoms attending these vesicles, are often so similar to those of the regular affection, while their ultimate operation on the



body is so very different, that we must always experience much anxiety in forming an opinion concerning the safety of our patient, if we are to judge of this very delicate point of practice from the description of these vesicles so minutely given by Dr Willan. In the third place, the use of this term leads to no view whereby we may overcome the doubt and uncertainty occasioned by adopting it; and thus leaves us completely in the dark with regard to the most important point in conducting vaccination, viz. the forming a certain opinion concerning the extent of the constitutional vaccine action, or antivariolous process, during the course of the cowpox affection.

The introduction of the terms “spurious cowpox,” and “irregular vesicles producing imperfect vaccination,” have, in my opinion, therefore, done much injury to the true interests of vaccination; and I must here, for my own part, declare, that were I, in my practice of inoculation for the cowpox, obliged to form my opinion concerning the presence and extent of the constitutional affection, and consequently concerning the future safety of my patient, from the description of the affection as given by the authors who adopt these terms, such are the doubts which these descriptions would constantly create in my mind, that however much I value this new inoculation, and few can value it more than I do, I would infinitely rather prefer at once to inoculate with the smallpox.

In consideration of these circumstances, I have long been accustomed to divide the vesicles of the cowpox into constitutional and into local vesicles; the contents of the former vesicles being absorbed into the circulating fluids, operate a certain change upon the constitution, whereby the person becomes secure against the attacks of smallpox; while the latter vesicles, from certain circumstances, have their action confined entirely to the part at which the inoculation was performed,

and consequently, although in many cases they are not to be distinguished by their appearance from the former, yet they operate no change on the constitution.

This division I have adopted, because I think it explains the true nature of those terminations of inoculation which are effectual, and of those which are ineffectual, and thus leads to a knowledge of a frequent cause of unsuccessful inoculation; and also because it leads to a mode of conducting the inoculation, whereby we can in every case ascertain whether the vaccine action has taken place on the constitution, and consequently can with certainty judge of the security of our patients against the attacks of smallpox.

Concerning the causes which may produce these local vesicles, (including several varieties of what are termed "spurious cowpox," and the "irregular vesicles" of Dr Willan) I would observe, that, by the existence of some peculiarity of the constitution, or of some morbid action in the body inimical to the vaccine action, the regular progress of the vesicle is disturbed; if this morbid action diminishes, or entirely ceases within a certain period, the irregularity of the vesicle will also diminish or cease altogether, and the vaccine action will ultimately take place on the constitution. But if the morbid action be severe, or continued beyond a certain period, or if the peculiarity of the constitution be permanent, the vaccine action will be entirely prevented from taking place on the constitution, and the affection (although it may advance through its local stage with less or more, or even with the most perfect regularity) will be confined to the part inoculated, and thus become a mere local affection, giving no security against the smallpox. Thus, we frequently find that the effect produced by inoculation for the first few days, has a very irregular appearance, and yet that, after a certain period, it assumes a vesicated and regular form, and that vaccination is thereby rendered complete; while in other instances, although the

appearance of the affection was at first regular, yet after some days it becomes quite irregular, and continues so during the remaining part of its course, and to such a degree as evidently to afford no protection whatever.

Although I have said that what has been called the spurious cowpox, and the irregular vesicles, are only local affections, I am well aware that they are often attended with fever, and other symptoms of constitutional excitement; but I am clearly of opinion, that these symptoms of constitutional excitement are not the effect of the inoculation, but of some morbid action in the constitution inimical to the vaccine action, and that this constitutional excitement is the cause, and not the effect, as has been imagined, of the irregularity observed in the progress of the affection at the part inoculated.

In this manner, in my opinion; are we to account for many of those failures in vaccination in affording the desired security, which are reported to have taken place, in instances in which the local affection appeared to have been perfect, or in which some irregularity took place, but which were attended with fever, or other constitutional symptoms, supposed to be those from the cowpox; for it has been found, as already stated, that after these symptoms of constitutional excitement have disappeared, if the patient be reinoculated with vaccine virus, the proper vesicle will be produced, and the proper mild constitutional vaccine action will be excited, evidently proving that the former constitutional excitement was altogether different from that induced by the cowpox.

If I am right in the above explanation of the various terminations of inoculation for the cowpox, it follows, that we should henceforth abolish the terms, "spurious cowpox,"



and "irregular vesicles producing imperfect vaccination," and substitute the following terms :

1st, *A Constitutional Affection*, when the disease is communicated from the vesicle at the part inoculated to the constitution, and the proper mild vaccine action is thereby produced.

2d, *A Local Affection*, when a vesicle is produced, the action of which, although it may appear to advance with various degrees of regularity in different individuals, is confined to the part at which the inoculation has been performed, with or without fever. And,

3d, *Failure*, applied to those cases in which no evident effect, or merely a slight degree of inflammation follows the operation, and also to those cases in which either a pustule, a crustaceous ulceration, or a festering sore takes place, and such may happen either with or without fever, or other constitutional symptoms.

From these observations it will appear, that the chief difficulty in conducting the inoculation for the cowpox, is in distinguishing the affection which is merely local from that which is constitutional, especially as it is allowed that the local affection may often be accompanied with severe, though accidental constitutional symptoms, while the constitutional affection, if the inoculation be conducted by one puncture in the usual way, frequently has not one obvious symptom of constitutional excitement to mark its presence. This difficulty, however great as it may appear to be, and important as it certainly is to conquer, will readily be overcome by conducting the inoculation according to the plan which is presently to be explained in the text.

## No. XI.

*See page 214*

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It has been objected to the test of perfect vaccination which has just been explained, that it is not fitted for general practice, because it increases the trouble of the operation, in so much, that it would require, in many cases, a second supply of vaccine matter to be procured four or five days after the first, which, in private practice, and in country situations, is not always to be ensured. See Med. and Phys. Journal, vol. viii. page 376.

It may, however, be observed, that in a matter of such moment as that of ascertaining the presence of the constitutional vaccine affection, and consequently whether a person be rendered secure against the attacks of the smallpox, trouble either to the operator, or to the patient, ought never to be mentioned. But as the operator must, in every case of inoculation, whether this test be practised or not, examine the progress of the affection many different times, in order to be enabled to judge whether or not it may have been effectual, the proper period for performing the second inocu-

lation may make one of these periods for examination, and the only additional trouble then will be, that of taking virus from the advancing vesicle, and inserting it into the other arm. They who think this too much trouble in order to ascertain the object in view, ought not to undertake this kind of practice; nor ought they, in my opinion, to be entrusted with conducting the vaccine inoculation. Concerning the objection against the use of this test in general practice, as requiring, in many cases, a second supply of vaccine matter to be procured four or five days after the first, &c.—it is an argument which is founded on misapprehension; for it has always been stated, that the second inoculation should never be performed until the vesicle from the first inoculation is so far advanced as to be equal in size to one at the end of the fifth or beginning of the sixth day, when the progress is regular, at which time abundance of virus may always be obtained from it for this purpose.

Mr George Bell, when mentioning the test of perfect vaccination which I have proposed, says, “The double inoculation was proposed as a test of the patient having upon him at the time the genuine cowpox. *When the second inoculation proves efficient, there can be no doubt that it affords additional evidence of the presence of the genuine vesicle; and were it always to be efficient, the general adoption of the measure would at least not produce any inconvenience. But the second inoculation is at least as apt to fail as the first; and a failure is known to take place in a considerable proportion of inoculations, so that many require to be inoculated three, four, or five times before the disease can be produced. It is evident, therefore, that, under these circumstances, the double inoculation must act as a double edged weapon. If it fails to excite a second vesicle, the confidence of the patient's friends in the preventive power of this inoculation will be shaken, however much they may believe in the antivariolous influence of the genu-*



“ine cowpox; so that it is as likely to do harm on the one hand as it might on the other hand have done good, by affording additional evidence of the efficacy of the inoculation.” See *Treatise on the Cowpox*, page 69.

In answer to this objection, it is to be observed, that if it were necessary for the operator to preserve the virus from the time of performing the first inoculation until the period necessary for performing the second, either upon a lancet, or upon plates of glass in the manner recommended by Mr Bell as the easiest and best, (See this Appendix, page 103.) the uncertainty of success from the operation might, in that case, no doubt be an objection. But as virus is in every case to be obtained from the vesicle advancing on the person himself, at the very period at which it is in a state of the greatest activity, and is to be inserted immediately into the other arm, it is thought that no person, accustomed to perform inoculation, can seriously urge the above objection when called on to operate under such advantageous circumstances. In such a case, want of success from the operation may mark want of dexterity in the operator, but certainly ought not to be urged as an objection to the measure proposed: with equal propriety might blood-letting be objected to as a remedy in pleurisy, because some surgeons perform that operation with less dexterity, and often, from that circumstance, with less success than others.

But it can by no means be admitted, according to Mr Bell's statement in the above quotation, “That the second inoculation is at least as apt to fail as the first.” Mr Bell cannot have attended to the causes which produce failure, otherwise he could not have made this assertion; for it is evident that failures in producing the desired effect from inoculation arise from the following circumstances.

*First*, From certain peculiarities in the constitutions of the persons inoculated, whereby they are rendered unsusceptible of the regular local action of the vaccine infection. These peculiarities may operate against the success of a first inoculation, but cannot be said to operate against the success of the second, when performed agreeably to the instructions given for practising this test; because unless the person be found susceptible of the vaccine action, at least in a local manner, by the first inoculation, there can be no occasion for performing the second inoculation. The regular progress of the first inoculation, however, at the proper period for performing the second, will show that the person is not unsusceptible of the local vaccine action, and therefore, in such cases, will do away unsusceptibility as a cause of failure in the second inoculation.

*A Second* cause of failure in producing the desired effect from a first inoculation, and that by far the most frequent, will be found to proceed from the quality of the virus used for inoculation; for this may have been taken at an improper stage of the disease, or it may have undergone some change by keeping, neither of which circumstances can take place with regard to the virus used for the second inoculation, if this be performed in the manner I have mentioned; for the virus is directed to be taken from a regularly advancing vesicle, at a period when it is in a state of the greatest activity, and to be immediately inserted into the opposite arm.

Here, then, are two great causes which may operate against the success of the first inoculation, (viz. a permanent or a temporary unsusceptibility of the vaccine action in the person inoculated, and a change in the quality of the virus employed,) neither of which can be said to operate against the success of the second inoculation when performed in the way I have recommended; and therefore Mr Bell's position

stated above, and the objection which he draws from that position, are founded on error.

*A third* cause of failure in producing the desired effect from inoculation, is one which is indeed common both to a first and to a second inoculation, when these are performed by the same operator, namely, a want of dexterity in performing the operation; and to persons who find themselves in this predicament, it is recommended that, until they become more expert, they should, in place of one puncture, use the precaution of performing the operation in two or even in three different places, in the manner I have recommended at page 105 of this Appendix. By so doing, the severity of the disease will be very little if any thing increased, even although the whole of the operations prove successful, and the practitioner will find his trouble very amply repaid. I can, however, state from my own experience, and also on the authority of many other persons, that with those who have had even a moderate share of vaccine practice, such precaution, in order to succeed in obtaining the test of perfect vaccination which I have proposed, is by no means necessary.

With regard to the accuracy of this test, and the necessity of using it in practice to be enabled to judge with precision concerning the efficacy of a first inoculation, Mr Bell says, "When we meet with this," (namely, the acceleration of the second inoculation in the manner described,) "it may be reckoned *a pretty certain test of the virus having entered the constitution*; but the failure of the second or third puncture is no proof that the patient has not received the genuine vaccine disease by the first inoculation, as these punctures will at least as often fail to produce pustules as if the patient had not been inoculated before. It happens, therefore, fortunately, that this kind of test is not necessary with those who are in the practice of the vaccine in-



“ oculation; none of whom, if they duly attend to the different stages of the disease, can ever hesitate to say whether or not the infection has taken place.” See page 68.

And again, “ I believe it is generally allowed that the symptoms of the disease, and appearance of the vesicles in their different stages, are now so thoroughly understood, that *no experienced practitioner*, who attends carefully to every circumstance requiring attention, can mistake a genuine for an imperfect or spurious vesicle. Now, if this *statement be correct*, there is no necessity, on the part of the practitioner, for any additional proof of the disease being genuine.” See page 70.

It may here with propriety be asked of Mr Bell, whether the directions contained in his Treatise, and whether he thinks that the directions contained in these “ Practical Observations,” are intended rather for the use of the *experienced practitioner* than for the use of the *inexperienced practitioner*. If he considers them chiefly for the use of the former class, we might both of us perhaps, without much detriment to them or the public, have saved ourselves a great deal of trouble, and some expence, by leaving them to judge from their own experience concerning the sufficiency of the inoculations which they may perform; but if they are intended chiefly for the use of the latter class, as I presume is the case, then, as it will readily be allowed that mistakes may frequently happen with them, it certainly becomes the duty of those who profess to give instructions to such practitioners, concerning the manner of conducting this new inoculation, to point out and to explain any circumstance which can tend to simplify the practice, and more especially to recommend the adoption of such measures as are calculated to afford “ a pretty certain test,” or even “ additional proofs of the disease being genuine.”

With regard to the correctness of the above statement made by Mr Bell, however, we shall appeal to his own opinion delivered in other parts of his treatise. At page 58 it is said, "All who have had sufficient experience in inoculating for the cowpox, know that there is no one certain criterion applicable to every case, by which it can be ascertained that the disease has pervaded the constitution; and it is also known, that the surest way," (Mr Bell does not say a sure or a certain way,) "of judging of this is by minute attention to the progress of the pustule" (vesicle) "from its commencement, and being satisfied that all the principal marks of the genuine cowpox have appeared." And nearly the same words are repeated at page 66. Again, "But it must be confessed that some patients have been seized with the natural smallpox, or have received the infection by inoculation, who were supposed to have undergone the genuine vaccine disease," see page 64. And although Mr Bell is inclined to attribute these failures to inattention on the part of the practitioner, yet it is thought they may, with more truth, be attributed to the want of some proper test of the presence of the antivariolous process on the constitution during the progress of the cowpox. At page 66, and also at page 71, immediately following the above statement, we find Mr Bell not only admitting that doubts may arise in the minds of practitioners, in judging concerning the effect of inoculation, but also recommending the test of perfect vaccination, which was first proposed by Dr Geo. Pearson, to be performed in all doubtful cases.—Of this test more will be said hereafter.

Mr Jo. Pearson, surgeon to the Lock Hospital, a gentleman "whose authority," as Mr Bell very properly observes, "must always have great weight," and whose judicious observations on the cowpox Mr Bell has quoted in his treatise, (see page 30,) says, "Since cowpox produces but little disorder of the constitution, and is not attended by any eruption

“on any part of the body, except that to which the infectious fluid is applied, it would be very desirable to have some criterion by which we could be assured that the inoculated person has undergone that inexplicable change which secures him against the smallpox.” See Mr Pearson’s Observations, page 12 of the Appendix to Dr Willan’s Treatise on Vaccine Inoculation.

From these passages, and also from my own experience, I am clearly of opinion, that there must frequently occur even amongst experienced practitioners, but especially amongst the inexperienced, cases in which much uncertainty will take place in forming a judgment concerning the extent or sufficiency of the affection produced by inoculation for the cowpox, and therefore that the adoption in practice of any measure which offers “*a pretty certain test of the virus having entered the constitution,*” or concerning which “*there can be no doubt that it affords additional evidence of the presence of the genuine vesicle,*” is not only desirable, but necessary, more especially when it is allowed that “*the general adoption of the measure would at least not produce any inconvenience.*” See Mr Bell’s Treatise, pages 68, 69.

Doctor Willan, after mentioning with much precision the test of perfect vaccination which I have proposed, says, “This test will, however, fail if the fluid employed be taken from the person’s own arm when the primary vesicle is one of the irregular kind above described, which produces disorder of the constitution, but affords only an imperfect security against the smallpox.” See Willan on Vaccine Inoculation, page 79.

If Dr Willan means by this assertion, that in cases in which a pustule, or a spreading crustaceous ulceration follows inoculation, the test will fail, it may be answered, that these are cases in which it can never be necessary to apply this test;



they are to be considered entirely as cases of failure, owing to the virus having lost its power of reproducing the disease, or owing to the presence of some morbid action in the body, which entirely prevents the vaccine action; they are cases sufficiently marked to render any test, such as that I have proposed, unnecessary. It is only in those cases, as has already been observed, in which the appearance of the vesicle is so regular at the proper period of its progress for performing the second inoculation, as to give good reason to expect that the constitutional affection will be regularly produced, that the test is to be practised in order to ascertain the actual presence of the constitutional affection. As applied to such cases, it is wished that Dr Willan would inform us whether he is still of opinion that the above assertion holds good; and if so, upon what circumstances this opinion is grounded, i. e. whether it be merely stated as a consequence of the theory which he has formed regarding the action excited on the constitution by the irregular vesicles, or whether it be a fact founded on his own experience. If the opinion be stated on the former grounds, it must be done away by the explanation which has been given above of the constitutional excitement frequently observed during the progress of irregular vesicles, and which appears to be more satisfactory than the theory of imperfect vaccination given by Dr Willan. If, however, the assertion be made on the grounds of Dr Willan's own experience, it will be esteemed highly important if the Doctor will state the circumstances of these failures by a minute detail of those cases in which they have occurred.

Various other tests of perfect vaccination have been proposed by authors and by practitioners of inoculation for the cowpox. Dr George Pearson physician to the Vaccine Pock Institution, sensible of the great difficulty which often occurs in judging whether or not the vaccine action has pervaded the constitution, by merely attending to the symptoms which

take place during the progress of the affection, proposed, at a very early period of this practice, that in all doubtful cases the patient should, after some weeks or months, be reinoculated with vaccine virus, as a test whether the first inoculation had been sufficient. See report on the cowpox inoculation, from the practice at the Vaccine Pock Institution during the years 1800-1-2, written by the physicians to the institution, page 50.

This test is founded on the opinion that persons who have gone through the cowpox, in a regular manner, are unsuspceptible of it, as a constitutional disease, a second time; and this position may, so far as I know, be regarded as a general and established rule in practice. If, therefore, it be found, that a person, on being reinoculated with vaccine virus some weeks or months after a former inoculation, goes regularly through the local and constitutional affection, we may certainly conclude that the former inoculation had been insufficient; but it is by no means thought that the converse of this position is equally true, namely, that if a second or third inoculation does not produce the cowpox affection regular in all its stages, we are certainly to conclude that the first inoculation had been complete. Thus, although a first inoculation may have been merely a local affection, yet the effect produced from a second or a third inoculation may also be only local; or from certain circumstances concerning the state of the virus employed, or the constitution of the person inoculated, a local vesicle, a pustule only, or merely a slight degree of inflammation may be produced, as frequently happens in persons who never have been vaccinated, and still the patient shall be left susceptible of the smallpox. The disadvantage of this test, therefore, is, that having once doubted the sufficiency of the first inoculation, it can be only after performing many inoculations at considerable distances of time, with the same stock of virus which had produced the regular disease in others, that we can establish such a degree of con-

fidence in the effect of the first inoculation, or in the unsusceptibility of our patient to be affected with the vaccine virus, as to enable us to form an opinion concerning his security against the smallpox ; and this confidence, it is evident from the nature of the test, which is altogether negative, can only be established in exact proportion to the number of inoculations which may have been performed with active virus, as a criterion of the sufficiency of the first inoculation.

Mr Bell, in one part of his treatise already noticed, seems aware of the insufficiency of this test, and in another part of the same treatise he recommends the use of it, as affording what he conceives to be a sure test whether the person has at any former period passed through the cowpox or the smallpox. At page 66, Mr Bell says, " In every case of this kind, in which there is reason to suspect that the cowpox has not taken place, the inoculation should be repeated immediately with fluid matter; and if the appearances that have been already described are not produced, we may conclude, *with much probability*, that the patient has previously gone through the genuine cowpox." This probability will, as has already been observed, be in exact proportion to the number of reinoculations which have been performed with active virus; but would it not have been much better had the practitioner, by using the test of a second inoculation during the course of the first, been enabled to say *with certainty*, in place of "*much probability*," that the patient had previously gone regularly through the cowpox ? At page 71, Mr Bell says, " If, notwithstanding the assurances of the surgeon, the patient's friends shall have any doubt as to the genuine cowpox having taken place, *or if in consequence of any unforeseen or uncommon circumstance, the inoculator himself shall see cause to hesitate in pronouncing on the real nature of the disease*; then by much the best way is, to perform the inoculation some weeks after the patient has re-



“ covered from the first ; and as I conceive a second inoculation, provided it is followed by the formation of a vesicle, at such a distance of time, to be a never-failing invariable test whether he has at any former period passed through the cowpox or smallpox ; I would even go farther, and propose that it should be adopted in every case where there can be any doubt.”

It is here to be remarked, that much ambiguity and confusion pervade the whole of Mr Bell's treatise, by his using the terms “pustule” and “vesicle” indiscriminately. In his description of the symptoms of the inoculated cowpox, the term *vesicle* is uniformly employed ; and the appearance and structure of the vesicle produced in the regular cowpox are very minutely described, and are certainly very different from the appearance and structure of a pustule. Again, when describing what he calls the spurious cowpox, Mr Bell generally employs the term *pustule* ; and although one great mark of distinction, between what is called the genuine and the spurious cowpox, appears to be, that in the former a vesicle, and in the latter a pustule, is produced, yet these terms are often used in other parts of his treatise without any discrimination ; even the plate which is given to show the appearance of the cowpox in its different stages, is titled, “Pustules of the genuine cowpox in their successive stages,” while, in the description of that plate, the term “vesicle” is used ; so that it becomes extremely difficult to say in what sense the term *vesicle* is employed in the above passage : if by the term “vesicle,” Mr Bell there means an irregular vesicle, it must be observed, that we have the authority of Dr Pearson, Dr Willan, Mr Whately, and others, to assert, that irregular or local vesicles may be produced by reinoculating with vaccine virus persons who had at some former period gone through the cowpox or the smallpox re-

gularly\*; and if, by the term “vesicle” in the above passage, Mr Bell means “a pustule,” or if he regards these terms as synonymous, and that they may be used indiscriminately, then we can also assert, on his own authority, that these (viz. vesicles or pustules) are frequently produced by inoculating with vaccine virus persons who have formerly passed through the cowpox or the smallpox, and consequently that such appearances cannot be considered as a test of either one thing or another; for Mr Bell also gives a plate in his treatise, in the explanation of which he says, “In this plate are represented the appearances of the *pustule* “produced by inoculating a person with vaccine matter “who has already had the cowpox or the smallpox.” If, therefore, on the one hand, Mr Bell be of opinion that the terms pustule and vesicle are not synonymous, or ought not to be used indiscriminately, it must be admitted that he is wrong in having done so; or if, on the other hand, he be of opinion that they are synonymous, or ought to be used indiscriminately, then it must be admitted that he is also wrong in having made the above statement, allowing, as he does, that a pustule or vesicle may be produced or formed by inoculating a person with vaccine matter, whether he has already had the cowpox or the smallpox, or whether he has not had either of these diseases.

But there is still another ambiguity in this passage; it is concerning the inference to be drawn from the appearance of what is thought to be a “never failing invariable test,” for Mr Bell has omitted to mention whether he conceives

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\* See Report of the Vaccine Pock Institution, pages 81 and 91,—and also Willan on Vaccine Inoculation, page 40, note,—and the same observation is also agreeable to my own experience and to the experience of my colleagues at the Vaccine Institution of this place.

*the formation of a vesicle*, in the way he states, to be a test of the person having passed through the cowpox, or of his not having passed through the cowpox, he has left every one to explain this according as future events may justify.

Although, however, Mr Bell, in the above quotation, leaves us entirely in the dark whether he conceives the formation of a vesicle, at the distance of some weeks after the patient has recovered from the first inoculation, to be a never failing and invariable test whether the person has passed through the disease, or whether he has not passed through it; yet I am inclined to think, (from the grounds upon which this test was proposed by Dr Pearson,) that he conceives the formation of a vesicle, from a second inoculation as above stated, to be a proof that the person has not passed through the disease at a former period. Now, if this be really Mr Bell's opinion, and if, by the term vesicle, he means a regular and constitutional cowpox vesicle, according to Dr Willan's definition of that term, then we are perfectly agreed with regard to the nature of this test: Thus, if a regular constitutional vesicle be produced by a second or third inoculation, we may with certainty conclude that the first had been insufficient. But although a regular vesicle is not produced by a second or by repeated inoculations, we can only from this negative proof conclude with probability, (which probability will be greater or less according to the number of reinoculations performed), that the vaccine process had formerly taken place on the constitution. It must therefore be admitted, that in proportion as the positive proof of perfect vaccination, to be obtained by the test which I have proposed, is stronger, and is also attended with less trouble, if that should be thought of any importance, than the negative proof of the same circumstance to be obtained by the test proposed by Dr Pearson, and recommended by Mr Bell; in the same proportion is the former test to be preferred to the latter.



Inoculation with the infection of smallpox has, even lately, been proposed by some authors as a test of perfect vaccination. During the early period of the Jennerian discovery, inoculation with the infection of smallpox, was a measure very proper and necessary in order to ascertain the antivariolous powers of the vaccine process on the constitution, and thus to give confidence in the practice; these important points, however, being once thoroughly established, it is my sincere wish and hope, that then the variolous inoculation, as a test of perfect vaccination, may, from a want of infectious matter, be utterly impracticable; and I would wish it to be observed as a rule, even at present, that this practice ought not to be had recourse to, unless under very particular circumstances, and should then be used with the greatest caution, not only as it may produce unpleasant symptoms in persons on whom such inoculations are performed, but also because, if had recourse to on slight occasions, it might produce much distress, and even fatal consequences to others. For although it be generally understood, that persons who have passed regularly through the cowpox, or the smallpox, are unsusceptible of the smallpox again, yet, as we know from what has been stated above, that there are not only exceptions to this rule, but that these exceptions are more numerous than have hitherto been imagined; every known method should therefore be employed for ascertaining whether or not the vaccine process may have taken place on the constitution before this test is had recourse to. Dr Willan and others relate many cases in which the human constitution, after having undergone the full effects of smallpox infection, was still found liable to be severely disordered by inoculation, or by casual exposure to the infection of that disease in a concentrated state. Such occurrences do sometimes take place in mothers nursing their children, and in others attending on persons who are affected with the confluent smallpox; and there are instances on record, in which even the same person has been, in this manner, repeatedly and severely affected. Such

cases, as Dr Willan very properly observes, “ should warn  
“ us against the indiscriminate use of variolous inoculation,  
“ as a test of the correctness of vaccination, or for any other  
“ purpose.” See page 72.

Mr George Bell indeed says, “ when it is not with cer-  
“ tainty known, whether the genuine vaccine disease has been  
“ produced, the operation should either be repeated, or the  
“ patient should be inoculated with the smallpox, by which  
“ complete certainty can be obtained; and, as the patient,  
“ *if he has passed through the genuine cowpox*, will not be sus-  
“ ceptible of the smallpox, no injury will be done by this ino-  
“ culation.” See Treatise page 72. But it must be evident  
that if inoculation for the smallpox be performed, as Mr Bell  
seems to recommend, after a first, or even after a second ino-  
culation for the cowpox, both of which have been doubtful,  
the patient, *if he has not passed through the cowpox*, will  
very probably be not only himself infected, but may, with-  
out the greatest attention, spread the disease amongst hun-  
dreds of his fellow creatures.

FINIS.



















